OM-193 472L
April 2004

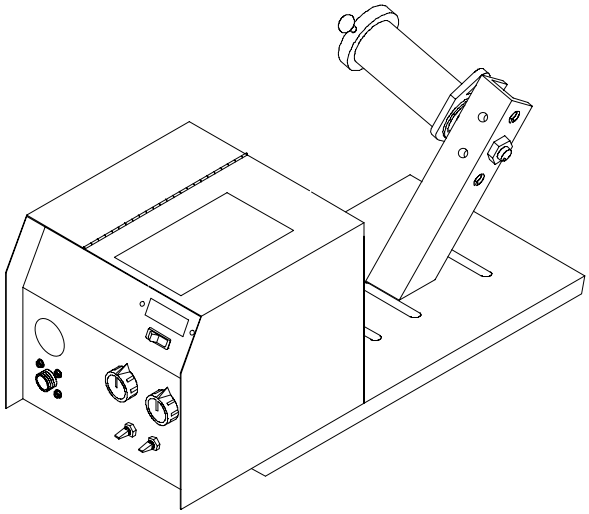
Processes

MIG (GMAW) Welding
Flux Cored (FCAW) Welding

Description

Wire Feeder

22A, 24A



OWNER'S MANUAL

Visit our website at
www.MillerWelds.com

From Miller to You

Thank you and *congratulations* on choosing Miller. Now you can get the job done and get it done right. We know you don't have time to do it any other way.

That's why when Niels Miller first started building arc welders in 1929, he made sure his products offered long-lasting value and superior quality. Like you, his customers couldn't afford anything less. Miller products had to be more than the best they could be. They had to be the best you could buy.

Today, the people that build and sell Miller products continue the tradition. They're just as committed to providing equipment and service that meets the high standards of quality and value established in 1929.

This Owner's Manual is designed to help you get the most out of your Miller products. Please take time to read the Safety precautions. They will help you protect yourself against potential hazards on the worksite. We've made installation and operation quick and easy. With Miller you can count on years of reliable service with proper maintenance. And if for some reason the unit needs repair, there's a Troubleshooting section that will help you figure out what the problem is. The parts list will then help you to decide the exact part you may need to fix the problem. Warranty and service information for your particular model are also provided.

ISO 9001:2000 REGISTERED QUALITY SYSTEM

Miller is the first welding equipment manufacturer in the U.S.A. to be registered to the ISO 9001:2000 Quality System Standard.

Miller Electric manufactures a full line of welders and welding related equipment. For information on other quality Miller products, contact your local Miller distributor to receive the latest full line catalog or individual catalog sheets. **To locate your nearest distributor or service agency call 1-800-4-A-Miller, or visit us at www.MillerWelds.com on the web.**

TRUE BLUE® WARRANTY

Working as hard as you do – every power source from Miller is backed by the most hassle-free warranty in the business.

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SECTION 1 − SAFETY PRECAUTIONS - READ BEFORE USING

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1-1. Symbol Usage

Means Warning! Watch Out! There are possible hazards with this procedure! The possible hazards are shown in the adjoining symbols.

▲ **Marks a special safety message.**

☞ *Means "Note"; not safety related.*

This group of symbols means Warning! Watch Out! possible ELECTRIC SHOCK, MOVING PARTS, and HOT PARTS hazards. Consult symbols and related instructions below for necessary actions to avoid the hazards.

1-2. Arc Welding Hazards

▲ **The symbols shown below are used throughout this manual to call attention to and identify possible hazards. When you see the symbol, watch out, and follow the related instructions to avoid the hazard. The safety information given below is only a summary of the more complete safety information found in the Safety Standards listed in Section 1-5. Read and follow all Safety Standards.**

▲ **Only qualified persons should install, operate, maintain, and repair this unit.**

▲ **During operation, keep everybody, especially children, away.**

ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

- Do not touch live electrical parts.
- Wear dry, hole-free insulating gloves and body protection.
- Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground.
- Do not use AC output in damp areas, if movement is confined, or if there is a danger of falling.
- Use AC output ONLY if required for the welding process.
- If AC output is required, use remote output control if present on unit.
- Disconnect input power or stop engine before installing or servicing this equipment. Lockout/tagout input power according to OSHA 29 CFR 1910.147 (see Safety Standards).
- Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.
- Always verify the supply ground − check and be sure that input power cord ground wire is properly connected to ground terminal in disconnect box or that cord plug is connected to a properly grounded receptacle outlet.
- When making input connections, attach proper grounding conductor first − double-check connections.
- Frequently inspect input power cord for damage or bare wiring − replace cord immediately if damaged − bare wiring can kill.
- Turn off all equipment when not in use.
- Do not use worn, damaged, undersized, or poorly spliced cables.
- Do not drape cables over your body.
- If earth grounding of the workpiece is required, ground it directly with a separate cable.
- Do not touch electrode if you are in contact with the work, ground, or another electrode from a different machine.
- Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual.
- Wear a safety harness if working above floor level.
- Keep all panels and covers securely in place.
- Clamp work cable with good metal-to-metal contact to workpiece or worktable as near the weld as practical.
- Insulate work clamp when not connected to workpiece to prevent contact with any metal object.
- Do not connect more than one electrode or work cable to any single weld output terminal.

SIGNIFICANT DC VOLTAGE exists after removal of input power on inverters.

- Turn Off inverter, disconnect input power, and discharge input capacitors according to instructions in Maintenance Section before touching any parts.

FUMES AND GASES can be hazardous.

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

- Keep your head out of the fumes. Do not breathe the fumes.
- If inside, ventilate the area and/or use exhaust at the arc to remove welding fumes and gases.
- If ventilation is poor, use an approved air-supplied respirator.
- Read the Material Safety Data Sheets (MSDSs) and the manufacturer's instructions for metals, consumables, coatings, cleaners, and degreasers.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watch-person nearby. Welding fumes and gases can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.
- Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
- Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and if necessary, while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

ARC RAYS can burn eyes and skin.

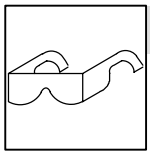
Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.

- Wear a welding helmet fitted with a proper shade of filter to protect your face and eyes when welding or watching (see ANSI Z49.1 and Z87.1 listed in Safety Standards).
- Wear approved safety glasses with side shields under your helmet.
- Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc.
- Wear protective clothing made from durable, flame-resistant material (leather and wool) and foot protection.

WELDING can cause fire or explosion.

Welding on closed containers, such as tanks, drums, or pipes, can cause them to blow up. Sparks can fly off from the welding arc. The flying sparks, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode to metal objects can cause sparks, explosion, overheating, or fire. Check and be sure the area is safe before doing any welding.

- Protect yourself and others from flying sparks and hot metal.
- Do not weld where flying sparks can strike flammable material.
- Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
- Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
- Watch for fire, and keep a fire extinguisher nearby.
- Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
- Do not weld on closed containers such as tanks, drums, or pipes, unless they are properly prepared according to AWS F4.1 (see Safety Standards).
- Connect work cable to the work as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock and fire hazards.
- Do not use welder to thaw frozen pipes.
- Remove stick electrode from holder or cut off welding wire at contact tip when not in use.
- Wear oil-free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.
- Remove any combustibles, such as a butane lighter or matches, from your person before doing any welding.



FLYING METAL can injure eyes.

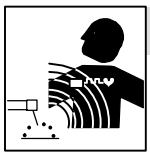
- Welding, chipping, wire brushing, and grinding cause sparks and flying metal. As welds cool, they can throw off slag.
- Wear approved safety glasses with side shields even under your welding helmet.

BUILDUP OF GAS can injure or kill.

- Shut off shielding gas supply when not in use.
- Always ventilate confined spaces or use approved air-supplied respirator.

HOT PARTS can cause severe burns.

- Do not touch hot parts bare handed.
- Allow cooling period before working on gun or torch.



MAGNETIC FIELDS can affect pacemakers.

- Pacemaker wearers keep away.
- Wearers should consult their doctor before going near arc welding, gouging, or spot welding operations.

NOISE can damage hearing.

Noise from some processes or equipment can damage hearing.

- Wear approved ear protection if noise level is high.

CYLINDERS can explode if damaged.

Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

- Protect compressed gas cylinders from excessive heat, mechanical shocks, slag, open flames, sparks, and arcs.
- Install cylinders in an upright position by securing to a stationary support or cylinder rack to prevent falling or tipping.
- Keep cylinders away from any welding or other electrical circuits.
- Never drape a welding torch over a gas cylinder.
- Never allow a welding electrode to touch any cylinder.
- Never weld on a pressurized cylinder − explosion will result.
- Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
- Turn face away from valve outlet when opening cylinder valve.
- Keep protective cap in place over valve except when cylinder is in use or connected for use.
- Read and follow instructions on compressed gas cylinders, associated equipment, and CGA publication P-1 listed in Safety Standards.

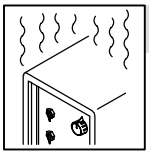
1-3. Additional Symbols For Installation, Operation, And Maintenance

FIRE OR EXPLOSION hazard.

- Do not install or place unit on, over, or near combustible surfaces.
- Do not install unit near flammables.
- Do not overload building wiring − be sure power supply system is properly sized, rated, and protected to handle this unit.

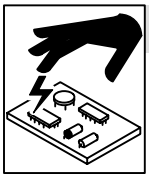
FALLING UNIT can cause injury.

- Use lifting eye to lift unit only, NOT running gear, gas cylinders, or any other accessories.
- Use equipment of adequate capacity to lift and support unit.
- If using lift forks to move unit, be sure forks are long enough to extend beyond opposite side of unit.



OVERUSE can cause OVERHEATING

- Allow cooling period; follow rated duty cycle.
- Reduce current or reduce duty cycle before starting to weld again.
- Do not block or filter airflow to unit.



STATIC (ESD) can damage PC boards.

- Put on grounded wrist strap BEFORE handling boards or parts.
- Use proper static-proof bags and boxes to store, move, or ship PC boards.

MOVING PARTS can cause injury.

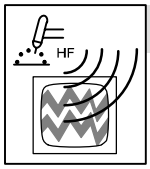
- Keep away from moving parts.
- Keep away from pinch points such as drive rolls.

WELDING WIRE can cause injury.

- Do not press gun trigger until instructed to do so.
- Do not point gun toward any part of the body, other people, or any metal when threading welding wire.

MOVING PARTS can cause injury.

- Keep away from moving parts such as fans.
- Keep all doors, panels, covers, and guards closed and securely in place.



H.F. RADIATION can cause interference.

- High-frequency (H.F.) can interfere with radio navigation, safety services, computers, and communications equipment.
- Have only qualified persons familiar with electronic equipment perform this installation.
- The user is responsible for having a qualified electrician promptly correct any interference problem resulting from the installation.
- If notified by the FCC about interference, stop using the equipment at once.
- Have the installation regularly checked and maintained.
- Keep high-frequency source doors and panels tightly shut, keep spark gaps at correct setting, and use grounding and shielding to minimize the possibility of interference.

ARC WELDING can cause interference.

- Electromagnetic energy can interfere with sensitive electronic equipment such as computers and computer-driven equipment such as robots.
- Be sure all equipment in the welding area is electromagnetically compatible.
- To reduce possible interference, keep weld cables as short as possible, close together, and down low, such as on the floor.
- Locate welding operation 100 meters from any sensitive electronic equipment.
- Be sure this welding machine is installed and grounded according to this manual.
- If interference still occurs, the user must take extra measures such as moving the welding machine, using shielded cables, using line filters, or shielding the work area.

1-4. California Proposition 65 Warnings

▲ **Welding or cutting equipment produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)**

▲ **Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.**

For Gasoline Engines:

▲ **Engine exhaust contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.**

For Diesel Engines:

▲ **Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.**

1-5. Principal Safety Standards

Safety in Welding, Cutting, and Allied Processes, ANSI Standard Z49.1, from American Welding Society, 550 N.W. LeJeune Rd, Miami FL 33126 (phone: 305-443-9353, website: www.aws.org).

Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping, American Welding Society Standard AWS F4.1, from American Welding Society, 550 N.W. LeJeune Rd, Miami, FL 33126 (phone: 305-443-9353, website: www.aws.org).

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, P.O. Box 9101, 1 Battery March Park, Quincy, MA 02269−9101(phone: 617−770−3000, website: www.nfpa.org and www.sparky.org).

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 1735 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202−4102 (phone: 703−412−0900, website: www.cganet.com).

Code for Safety in Welding and Cutting, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3 (phone: 800−463−6727 or in Toronto 416−747−4044, website: www.csa−international.org).

Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 11 West 42nd Street, New York, NY 10036−8002 (phone: 212−642−4900, website: www.ansi.org).

Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA Standard 51B, from National Fire Protection Association, P.O. Box 9101, 1 Battery March Park, Quincy, MA 02269−9101 (phone: 617−770−3000,website: www.nfpa.org and www. sparky.org).

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910, Subpart Q, and Part 1926, Subpart J, from U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250 (there are 10 Regional Offices−−phone for Region 5, Chicago, is 312−353−2220,website: www.osha.gov).

1-6. EMF Information

Considerations About Welding And The Effects Of Low Frequency Electric And Magnetic Fields

Welding current, as it flows through welding cables, will cause electromagnetic fields. There has been and still is some concern about such fields. However, after examining more than 500 studies spanning 17 years of research, a special blue ribbon committee of the National Research Council concluded that: “The body of evidence, in the committee's judgment, has not demonstrated that exposure to power-frequency electric and magnetic fields is a human-health hazard.” However, studies are still going forth and evidence continues to be examined. Until the final conclusions of the research are reached, you may wish to minimize your exposure to electromagnetic fields when welding or cutting.

To reduce magnetic fields in the workplace, use the following procedures:

1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.
4. Keep welding power source and cables as far away from operator as practical.
5. Connect work clamp to workpiece as close to the weld as possible.

About Pacemakers:

Pacemaker wearers consult your doctor first. If cleared by your doctor, then following the above procedures is recommended.

SECTION 2 − CONSIGNES DE SÉCURITÉ − À LIRE AVANT UTILISATION

2-1. Signification des symboles

Signifie « Mise en garde. Faire preuve de vigilance. » Cette procédure présente des risques identifiés par les symboles adjacents aux directives.

▲ **Identifie un message de sécurité particulier.**

☞ *Signifie « NOTA » ; n'est pas relatif à la sécurité.*

Ce groupe de symboles signifie « Mise en garde. Faire preuve de vigilance. » Il y a des dangers liés aux CHOCS ÉLECTRIQUES, aux PIÈCES EN MOUVEMENT et aux PIÈCES CHAUDES. Se reporter aux symboles et aux directives ci-dessous afin de connaître les mesures à prendre pour éviter tout danger.

2-2. Dangers relatifs au soudage à l'arc

▲ **Les symboles ci-après sont utilisés tout au long du présent manuel pour attirer l'attention sur les dangers potentiels et les identifier. Lorsqu'on voit un symbole, faire preuve de vigilance et suivre les directives mentionnées afin d'éviter tout danger. Les consignes de sécurité énoncées ci-après ne font que résumer le contenu des normes de sécurité mentionnées à la section 2-4. Lire et respecter toutes ces normes.**

▲ **L'installation, l'utilisation, l'entretien et les réparations ne doivent être confiés qu'à des personnes qualifiées.**

▲ **Pendant l'utilisation de l'appareil, tenir à l'écart toute personne, en particulier les enfants.**

LES DÉCHARGES ÉLECTRIQUES peuvent être mortelles.

Un simple contact avec des pièces sous tension peut causer une électrocution ou des blessures graves. L'électrode et le circuit de soudage sont sous tension dès que l'appareil est en fonctionnement. Le circuit d'entrée et les circuits internes de l'appareil sont également sous tension. En soudage semi−automatique ou automatique, le fil, le dévidoir, le logement des galets d'entraînement et les pièces métalliques en contact avec le fil de soudage sont sous tension. Tout matériel mal installé ou mal mis à la terre présente un danger.

- Ne jamais toucher aux pièces électriques sous tension.
- Porter des gants et des vêtements de protection secs et exempts de trous.
- S'isoler de la pièce et de la terre au moyen de tapis ou autres dispositifs isolants suffisamment grands pour empêcher tout contact physique avec la pièce ou la terre.
- Ne pas se servir d'une source de courant alternatif dans les zones humides, les endroits confinés ou là où on risque de tomber.
- Ne se servir d'une source de courant alternatif QUE si le procédé de soudage l'exige.
- Si l'utilisation d'une source de courant alternatif s'avère nécessaire, se servir de la fonction de télécommande si l'appareil en est équipé.
- Couper l'alimentation ou arrêter le moteur avant de procéder à l'installation, à la réparation ou à l'entretien de l'appareil. Couper/étiqueter l'alimentation selon la norme OSHA 29 CFR 1910.147 (voir les normes de sécurité).
- Installer et mettre à la terre correctement l'appareil conformément à son manuel d'utilisation et aux codes nationaux, provinciaux et municipaux.
- Toujours vérifier la terre du cordon d'alimentation − Vérifier et s'assurer que le fil de terre du cordon d'alimentation est bien raccordé à la borne de terre du sectionneur ou que la fiche du cordon est raccordée à une prise correctement mise à la terre.
- Pour exécuter les branchements d'entrée, fixer d'abord le conducteur de mise à la terre adéquat et contre−vérifier les connexions.
- Vérifier fréquemment le cordon d'alimentation et s'assurer qu'il n'est ni endommagé ni dénudé ; le remplacer immédiatement s'il est endommagé − tout câble dénudé peut causer une électrocution.
- Mettre l'appareil hors tension quand on ne l'utilise pas.
- Ne pas utiliser de câbles usés, endommagés, de calibre insuffisant ou mal épissés.
- Ne pas s'enrouler les câbles autour du corps.
- Si la pièce soudée doit être mise à la terre, le faire directement avec un câble distinct.
- Ne pas toucher l'électrode quand on est en contact avec la pièce, la terre ou une électrode d'une autre machine.
- N'utiliser que du matériel en bon état. Réparer ou remplacer sur−le−champ les pièces endommagées. Entretenir l'appareil conformément au présent manuel.
- Porter un harnais de sécurité quand on travaille en hauteur.
- Maintenir solidement en place tous les panneaux et capots.
- Fixer le câble de retour de façon à obtenir un bon contact métal sur métal avec la pièce à souder ou la table de travail, le plus près possible de la soudure.
- Ne pas connecter plus d'une électrode ou plus d'un câble de masse à un même terminal de sortie.

Il subsiste un COURANT CONTINU IMPORTANT dans les convertisseurs après la suppression de l'alimentation électrique.

- Arrêter les convertisseurs, débrancher le courant électrique et décharger les condensateurs d'alimentation selon les instructions énoncées à la section Entretien avant de toucher les pièces.

LES FUMÉES ET LES GAZ peuvent être dangereux.

Le soudage génère des fumées et des gaz dont l'inhalation peut être dangereuse pour la santé.

- Se tenir à distance des fumées et ne pas les inhaler.
- À l'intérieur, ventiler la zone et/ou utiliser un dispositif d'aspiration au niveau de l'arc pour l'évacuation des fumées et des gaz de soudage.
- Si la ventilation est insuffisante, utiliser un respirateur à adduction d'air agréé.
- Lire les fiches techniques de santé−sécurité (FTSS) et les instructions du fabricant concernant les métaux, les consommables, les revêtements, les nettoyants et les dégraisseurs.
- Ne travailler dans un espace clos que s'il est bien ventilé ou porter un respirateur à adduction d'air. Demander toujours à un surveillant dûment formé de se tenir à proximité. Des fumées et des gaz de soudage peuvent se substituer à l'air, abaisser la teneur en oxygène et causer des lésions ou des accidents mortels. S'assurer que l'air est respirable.
- Ne pas souder à proximité d'opérations de dégraissage, de nettoyage ou de pulvérisation. La chaleur et les rayons de l'arc peuvent réagir en présence de vapeurs et former des gaz hautement toxiques et irritants.
- Ne pas souder de métaux munis d'un revêtement, tels que la tôle d'acier galvanisée, plombée ou cadmiée, à moins que le revêtement n'ait été enlevé dans la zone de soudage, que l'endroit soit bien ventilé, et si nécessaire, porter un respirateur à adduction d'air. Les revêtements et tous les métaux renfermant ces éléments peuvent dégager des fumées toxiques lorsqu'on les soude.

LES RAYONS DE L'ARC peuvent causer des brûlures oculaires et cutanées.

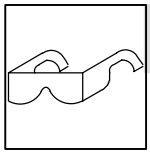
Le rayonnement de l'arc génère des rayons visibles et invisibles intenses (ultraviolets et infrarouges) susceptibles de causer des brûlures oculaires et cutanées. Des étincelles sont projetées pendant le soudage.

- Porter un masque de soudage muni d'un filtre de la nuance adéquate pour se protéger le visage et les yeux pendant le soudage ou pour regarder (voir les normes de sécurité ANSI Z49.1 et Z87.1).
- Porter des lunettes de sécurité à écrans latéraux sous le masque.
- Utiliser des écrans ou des barrières pour protéger les tiers de l'éclat éblouissant ou aveuglant de l'arc ; leur demander de ne pas regarder l'arc.
- Porter des vêtements de protection en matière durable et ignifuge (cuir ou laine) et des chaussures de sécurité.

LE SOUDAGE peut causer un incendie ou une explosion.

Le soudage effectué sur des récipients fermés tels que des réservoirs, des fûts ou des conduites peut causer leur éclatement. Des étincelles peuvent être projetées de l'arc de soudure. La projection d'étincelles, les pièces chaudes et les équipements chauds peuvent causer des incendies et des brûlures. Le contact accidentel de l'électrode avec tout objet métallique peut causer des étincelles, une explosion, un surchauffement ou un incendie. Avant de commencer le soudage, vérifier et s'assurer que l'endroit ne présente pas de danger.

- Se protéger et protéger les tiers de la projection d'étincelles et de métal chaud.
- Ne pas souder à un endroit où des étincelles peuvent tomber sur des substances inflammables.
- Placer toutes les substances inflammables à une distance de 10,7 m de l'arc de soudage. En cas d'impossibilité, les recouvrir soigneusement avec des protections agréées.
- Des étincelles et des matières en fusion peuvent facilement passer même par des fissures et des ouvertures de petites dimensions.
- Surveiller tout déclenchement d'incendie et tenir un extincteur à proximité.
- Le soudage effectué sur un plafond, un plancher, une paroi ou une cloison peut déclencher un incendie de l'autre côté.
- Ne pas souder des récipients fermés tels que des réservoirs, des fûts ou des conduites, à moins qu'ils n'aient été préparés conformément à l'AWS F4.1 (voir les normes de sécurité).
- Brancher le câble sur la pièce le plus près possible de la zone de soudage pour éviter que le courant ne circule sur une longue distance, par des chemins inconnus, et ne cause des risques d'électrocution et d'incendie.
- Ne pas utiliser le poste de soudage pour dégeler des conduites gelées.
- En cas de non utilisation, enlever la baguette d'électrode du porte−électrode ou couper le fil au raz du tube−contact.
- Porter des vêtements de protection exempts d'huile tels que des gants en cuir, une chemise en tissu épais, des pantalons sans revers, des chaussures montantes et un masque.
- Avant de souder, retirer tout produit combustible de ses poches, tel qu'un briquet au butane ou des allumettes.



LES PARTICULES PROJETÉES peuvent blesser les yeux.

- Le soudage, le burinage, le passage de la pièce à la brosse métallique et le meulage provoquent l'émission d'étincelles et de particules métalliques. Pendant leur refroidissement, les soudures risquent de projeter du laitier.
- Porter des lunettes de sécurité à écrans latéraux agréés, même sous le masque de soudage.

LES ACCUMULATIONS DE GAZ peuvent causer des blessures ou même la mort.

- Couper l'alimentation en gaz protecteur en cas de non utilisation.
- Veiller toujours à bien ventiler les espaces confinés ou porter un respirateur à adduction d'air agréé.

LES PIÈCES CHAUDES peuvent causer des brûlures graves.

- Ne pas toucher les pièces chaudes à main nue.
- Prévoir une période de refroidissement avant d'utiliser le pistolet ou la torche.

LES CHAMPS MAGNÉTIQUES peuvent perturber le fonctionnement des stimulateurs cardiaques.

- Les personnes qui portent un stimulateur cardiaque doivent se tenir à distance.
- Ils doivent consulter leur médecin avant de s'approcher d'un lieu où on exécute des opérations de soudage à l'arc, de gougeage ou de soudage par points.

LE BRUIT peut affecter l'ouïe.

Le bruit de certains processus et équipements peut affecter l'ouïe.

- Porter des protecteurs d'oreille agréés si le niveau sonore est trop élevé.

Les BOUTEILLES endommagées peuvent exploser.

Les bouteilles de gaz protecteur contiennent du gaz sous haute pression. Toute bouteille endommagée peut exploser. Comme les bouteilles de gaz font normalement partie du procédé de soudage, les manipuler avec précaution.

- Protéger les bouteilles de gaz comprimé de la chaleur excessive, des chocs mécaniques, du laitier, des flammes nues, des étincelles et des arcs.
- Placer les bouteilles debout en les fixant dans un support stationnaire ou dans un porte−bouteilles pour les empêcher de tomber ou de se renverser.
- Tenir les bouteilles éloignées des circuits de soudage ou autres circuits électriques.
- Ne jamais poser une torche de soudage sur une bouteille de gaz.
- Ne jamais mettre une électrode de soudage en contact avec une bouteille de gaz.
- Ne jamais souder une bouteille contenant du gaz sous pression − elle risquerait d'exploser.
- N'utiliser que les bouteilles de gaz protecteur, régulateurs, tuyaux et raccords adéquats pour l'application envisagée ; les maintenir en bon état, ainsi que les pièces connexes.
- Détourner la tête lorsqu'on ouvre la soupape d'une bouteille.
- Laisser le capuchon protecteur sur la soupape, sauf en cas d'utilisation ou de branchement de la bouteille
- Lire et suivre les instructions concernant les bouteilles de gaz comprimé, les équipements associés et les publications P−1 de la CGA, mentionnées dans les normes de sécurité.

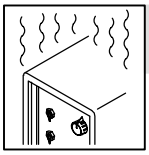
2-3. Autres symboles relatifs à l’installation, au fonctionnement et à l’entretien de l’appareil.

Risque D’INCENDIE OU D’EXPLOSION

- Ne pas placer l’appareil sur une surface inflammable, ni au−dessus ou à proximité d’elle.
- Ne pas installer l’appareil à proximité de produits inflammables.
- Ne pas surcharger l’installation électrique − s’assurer que l’alimentation est correctement dimensionnée et protégée avant de mettre l’appareil en service.

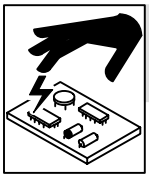
LA CHUTE DE L’APPAREIL peut blesser.

- N’utiliser que l’anneau de levage pour lever l’appareil. NE PAS utiliser le chariot, les bouteilles de gaz ou tout autre accessoire.
- Utiliser un engin de capacité adéquate pour lever l’appareil.
- Si on utilise un chariot élévateur pour déplacer l’unité, s’assurer que les fourches sont suffisamment longues pour dépasser du côté opposé de l’appareil.



L’EMPLOI EXCESSIF peut FAIRE SURCHAUFFER L’ÉQUIPEMENT.

- Prévoir une période de refroidissement ; respecter le cycle opératoire nominal.
- Réduire le courant ou le cycle opératoire avant de reprendre le soudage.
- Ne pas obstruer les orifices ou filtrer l’alimentation en air du poste.



LES CHARGES ÉLECTROSTATIQUES peuvent endommager les circuits imprimés.

- Mettre un bracelet antistatique AVANT de manipuler des cartes ou des pièces.
- Utiliser des pochettes et des boîtes antistatiques pour stocker, déplacer ou expédier des cartes de circuits imprimés.

LES PIÈCES MOBILES peuvent causer des blessures.

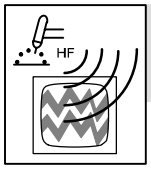
- Se tenir à l’écart des pièces mobiles.
- Se tenir à l’écart des points de coincement tels que les dévidoirs.

LES FILS DE SOUDAGE peuvent causer des blessures.

- Ne pas appuyer sur la gâchette avant d’en avoir reçu l’instruction.
- Ne pas diriger le pistolet vers soi, vers d’autres personnes ou vers toute pièce mécanique en engageant le fil de soudage.

LES ORGANES MOBILES peuvent causer des blessures.

- Se tenir à l’écart des organes mobiles comme les ventilateurs.
- Maintenir fermés et bien fixés les portes, panneaux, recouvrements et dispositifs de protection.

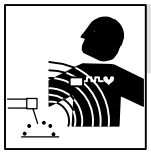


LE RAYONNEMENT HAUTE FRÉQUENCE (H. F.) risque de causer des interférences.

- Le rayonnement haute fréquence peut causer des interférences avec les équipements de radionavigation et de communication, les services de sécurité et les ordinateurs.
- Ne demander qu’à des personnes qualifiées familiarisées avec les équipements électroniques de faire fonctionner l’installation.
- L’utilisateur est tenu de faire corriger rapidement par un électricien qualifié les interférences causées par l’installation.
- Si la Federal Communications Commission signale des interférences, arrêter immédiatement l’appareil.
- Faire régulièrement contrôler et entretenir l’installation.
- Maintenir soigneusement fermés les panneaux et les portes des sources de haute fréquence, maintenir le jeu d’éclatement au réglage adéquat et utiliser une terre et un blindage pour réduire les interférences éventuelles.

LE SOUDAGE À L’ARC peut causer des interférences.

- L’énergie électromagnétique peut causer des interférences avec l’équipement électronique sensible tel que les ordinateurs et l’équipement commandé par ordinateur tel que les robots.
- Veiller à ce que tout l’équipement de la zone de soudage soit compatible au point de vue électromagnétique.
- Pour réduire la possibilité d’interférence, maintenir les câbles de soudage aussi courts que possible, les grouper, et les poser aussi bas que possible (par ex. : à terre).
- Veiller à souder à une distance de 100 mètres de tout équipement électronique sensible.
- Veiller à ce que le poste de soudage soit posé et mis à la terre conformément au présent manuel.
- En cas d’interférences après exécution des directives précédentes, il incombe à l’utilisateur de prendre des mesures supplémentaires telles que le déplacement du poste, l’utilisation de câbles blindés, l’utilisation de filtres de ligne ou la pose de protecteurs dans la zone de travail.



LES CHAMPS MAGNÉTIQUES peuvent affecter les stimulateurs cardiaques.

- Porteurs de stimulateur cardiaque, restez à distance.
- Les porteurs d’un stimulateur cardiaque doivent d’abord consulter leur médecin avant de s’approcher des opérations de soudage à l’arc, de gougeage ou de soudage par points.

2-4. Principales normes de sécurité

Safety in Welding, Cutting, and Allied Processes, norme ANSI Z49.1, de l'American Welding Society, 550 N.W. LeJeune Rd, Miami FL 33126 (téléphone : (305) 443−9353, site Web : www.aws.org).

Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping, norme American Welding Society AWS F4.1, de l'American Welding Society, 550 N.W. LeJeune Rd, Miami, FL 33126 (téléphone : (305) 443−9353, site Web : www.aws.org).

National Electrical Code, norme NFPA 70, de la National Fire Protection Association, P.O. Box 9101, 1 Battery March Park, Quincy, MA 02269−9101 (téléphone : (617) 770−3000, sites Web : www.nfpa.org et www.sparky.org).

Safe Handling of Compressed Gases in Cylinders, brochure CGA P−1, de la Compressed Gas Association, 1735 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202−4102 (téléphone : (703) 412−0900, site Web : www.cganet.com).

Code for Safety in Welding and Cutting, norme CSA W117.2, de la Canadian Standards Association, Standards Sales, 178 boulevard Rexdale, Rexdale (Ontario) Canada M9W 1R3 (téléphone : (800) 463−6727 ou à Toronto : (416) 747−4044, site Web : www.csa−international.org).

Practice For Occupational And Educational Eye And Face Protection, norme ANSI Z87.1, de l'American National Standards Institute, 11 West 42nd Street, New York, NY 10036−8002 (téléphone : (212) 642−4900, site Web : www.ansi.org).

Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, norme NFPA 51B, de la National Fire Protection Association, P.O. Box 9101, 1 Battery March Park, Quincy, MA 02269−9101 (téléphone : (617) 770−3000, site Web : www.nfpa.org et www.sparky.org).

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910, Subpart Q, and Part 1926, Subpart J, de l'U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250 (il y a 10 bureaux régionaux − Téléphone pour la Région 5, Chicago : (312) 353−2220, site Web : www.osha.gov).

2-5. Information sur les champs électromagnétiques

Données sur le soudage électrique et les effets des champs magnétiques basse fréquence sur l'organisme

En parcourant les câbles de soudage, le courant crée des champs électromagnétiques. Les effets potentiels de tels champs restent préoccupants. Cependant, après avoir examiné plus de 500 études qui ont été faites pendant une période de recherche de 17 ans, un comité de spécialistes du National Research Council a conclu : « L'accumulation de preuves n'a pas démontré que l'exposition aux champs magnétiques et aux champs électriques à haute fréquence constitue un risque pour la santé humaine ». Toutefois, les études et l'examen des preuves se poursuivent. En attendant les conclusions finales de la recherche, il serait souhaitable de réduire l'exposition aux champs électromagnétiques pendant le soudage ou le coupage.

Afin de réduire les champs électromagnétiques en milieu de travail, respecter les consignes suivantes :

1. Garder les câbles ensemble en les torsadant ou en les fixant avec du ruban adhésif.

2. Mettre tous les câbles du côté opposé à l'opérateur.

3. Ne pas s'enrouler les câbles autour du corps.

4. Garder le poste de soudage et les câbles le plus loin possible de soi.

5. Placer la pince de masse le plus près possible de la zone de soudage.

Consignes relatives aux stimulateurs cardiaques :

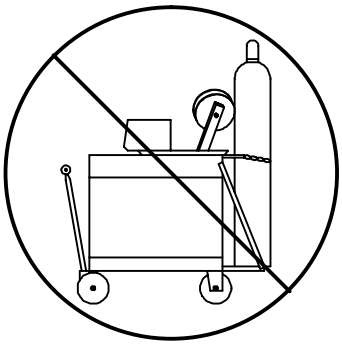
Les personnes qui portent un stimulateur cardiaque doivent avant tout consulter leur médecin. Si ce dernier les déclare aptes, il leur est recommandé de respecter les consignes ci-dessus.

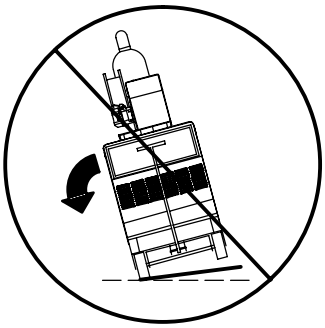
SECTION 3 − INSTALLATION

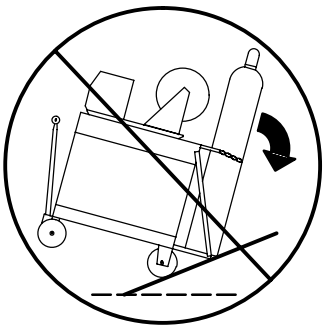
3-1. Specifications

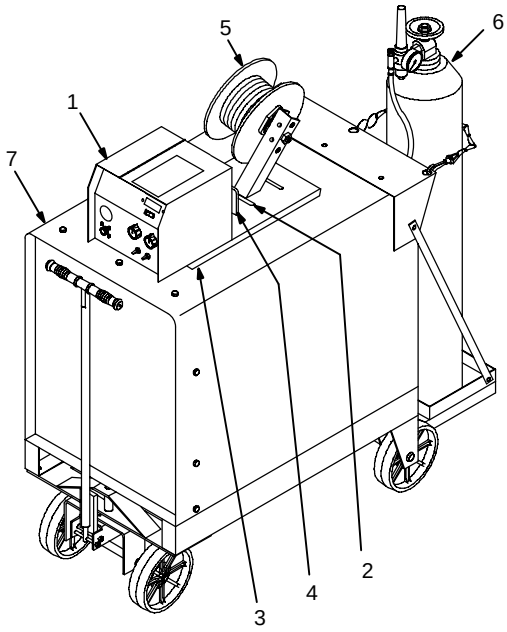
Type of Input Power	Welding Power Source Type	Wire Feed Speed Range	Wire Diameter Range	Welding Circuit Rating	Overall Dimensions	Weight
24 Volts AC Single Phase 7 Amperes 50/60 Hz	Constant Voltage (CV) DC With 14-Pin And Contactor Control	75 to 750 ipm (1.9 To 19 mpm)	.023 To 5/64 in (0.6 To 2 mm) Max Spool Weight: 60 lb (27 kg)	100 Volts, 500 Amperes, 100% Duty Cycle	Length: 23-1/2 in (597 mm) Width: 10-3/4 in (273 mm) Height: 11 in (279 mm)	35 lb (15.9 kg)

3-2. Site Selection









1 Wire Feeder

2 Lifting Eye

3 Rubber Feet

4 Slot

Choose slot that allows all rubber feet to sit securely on top of welding power source.

5 Wire Spool/Reel

6 Gas Cylinder (Customer Supplied)

7 Welding Power Source

▲ **Do not put feeder where welding wire hits cylinder.**

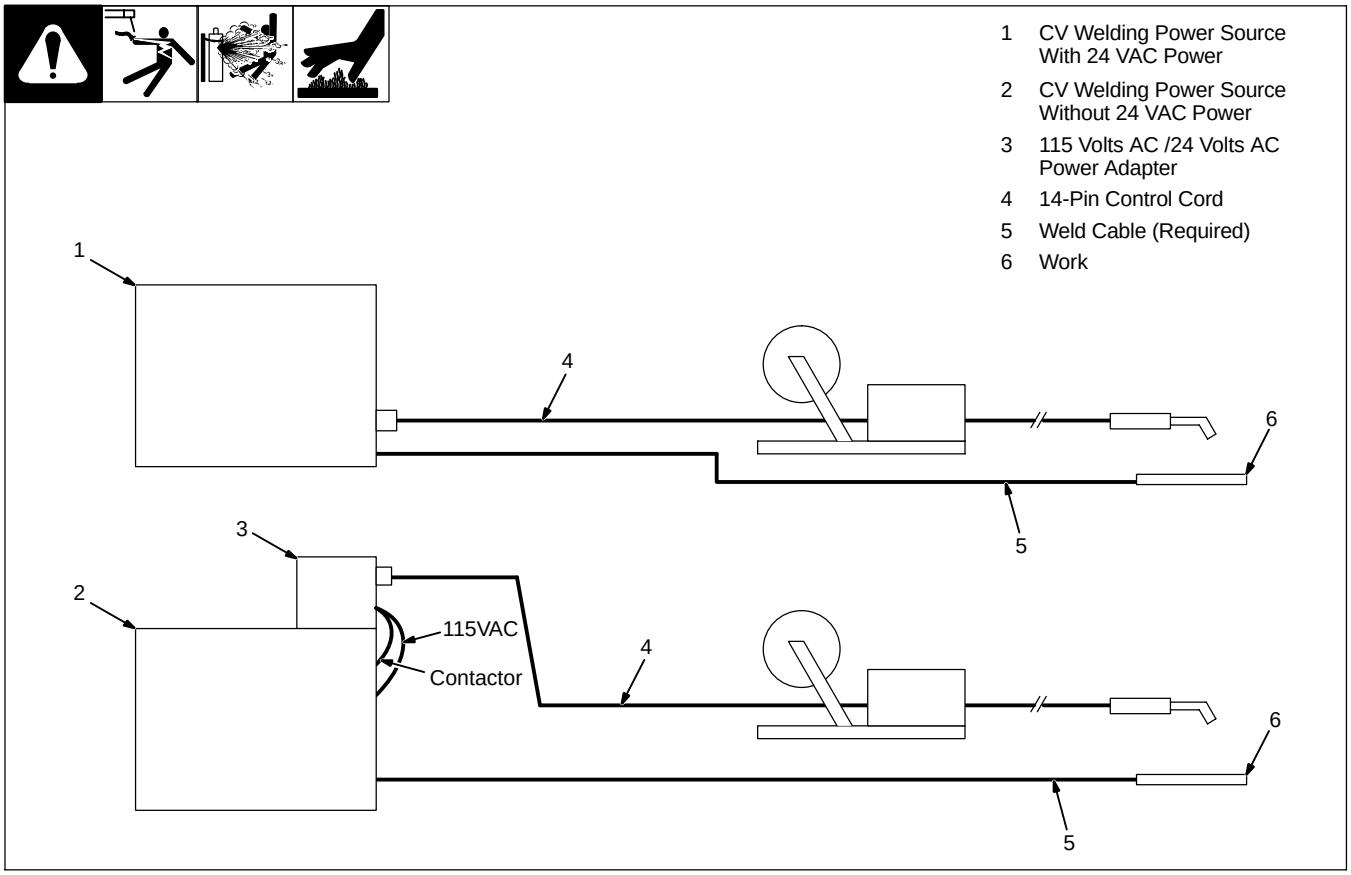
▲ **Do not move or operate equipment when it could tip.**

802 348-A / Ref. 152 468-A / 155 242 / 801 919-B

3-3. Gun Recommendation Table

Process	Gun
GMAW − Hard or Corded Wires	M25 Or M40
FCAW − Self-Shielding Wires	GA-40GL

3-4. Equipment Connection Diagrams



1 CV Welding Power Source With 24 VAC Power

2 CV Welding Power Source Without 24 VAC Power

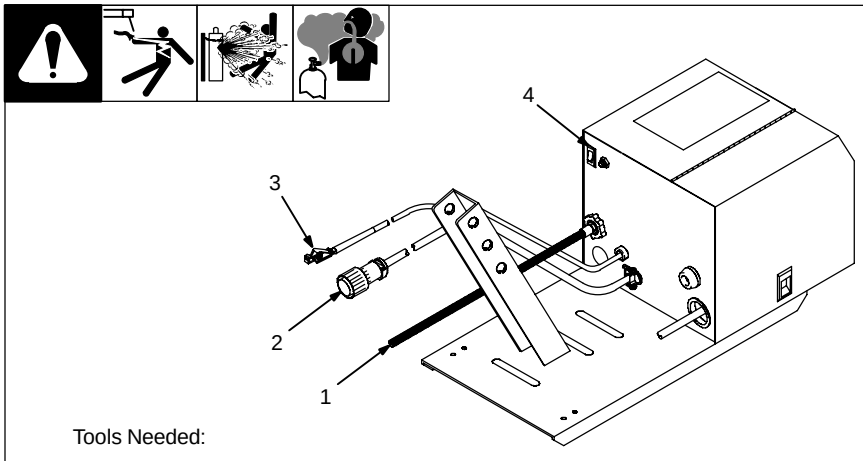
3 115 Volts AC /24 Volts AC Power Adapter

4 14-Pin Control Cord

5 Weld Cable (Required)

6 Work

3-5. 14-Pin Plug, Shielding Gas And Optional Volt Sense Lead



1 Gas Hose With 5/8-18 Right-hand Thread Fittings (Customer Supplied)

2 14 Pin Plug PLG2

Use plug to make connection to welding power source.

3 Optional Volt Sense Lead (Part Of Meter Option)

Connect to work.

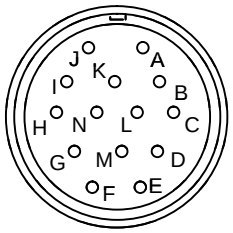
4 Power Switch

Tools Needed:

5/8, 11/16 in

802 349-A

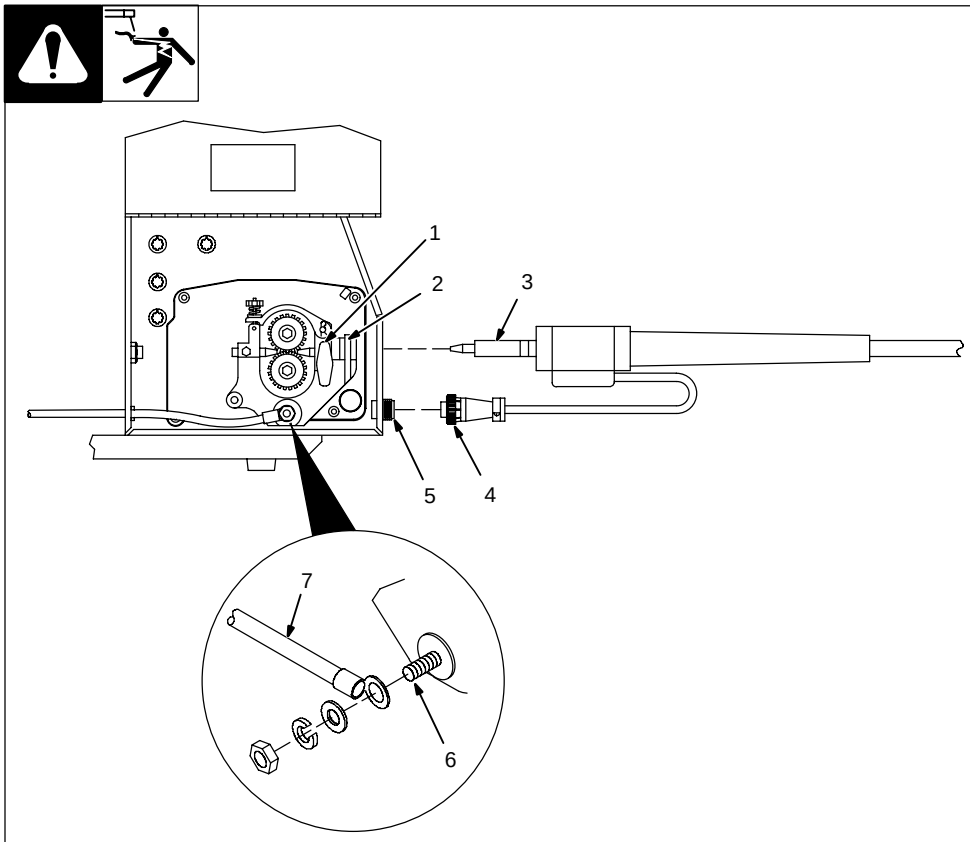
3-6. 14-Pin Plug Information

REMOTE 14	Pin*	Pin Information
	A	24 volts ac with respect to pin G.
	B	Contact closure to A completes 24 volts ac contactor control circuit.
	G	Circuit common for 24 volts AC circuit.
	C	+10 volts dc output to remote control with respect to pin D.
	D	Remote control circuit common.
	E	0 to +10 volts dc input command signal from remote control with respect to pin D.
	F	Current feedback; 0 to 10 volts dc, 1 V/100 A
	H	Voltage feedback; 0 to 10 volts dc, 1 V/10 arc volts

*The remaining pins are not used.

Ref. S-0004-A

3-7. Connecting Welding Gun And Weld Cable



1 Gun Securing Knob

2 Gun Block

3 Gun Outlet Wire Guide

Loosen knob, insert gun into block. Position outlet wire guide as close as possible to drive rolls without touching. Tighten knob.

4 Gun Trigger Plug

5 Gun Trigger Receptacle

6 Weld Cable Terminal

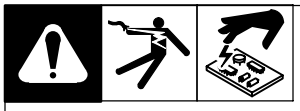
7 Weld Cable From Welding Power Source

Tools Needed:

9/16, 5/8 in

Ref. 802 356

3-8. Optional Meter Circuit Board Settings

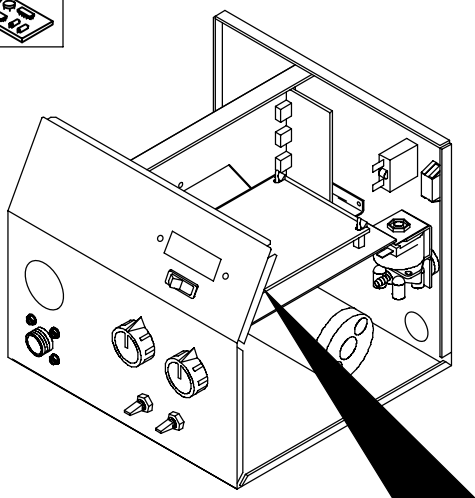


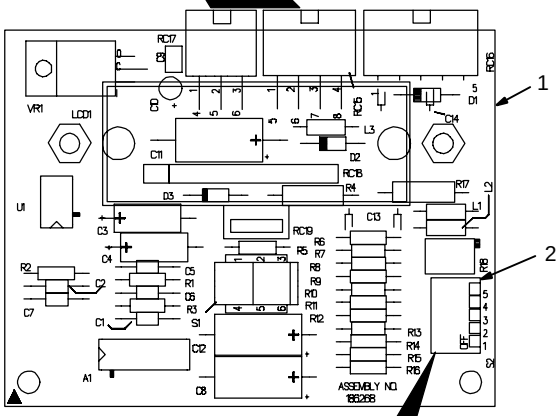
1 Meter Circuit Board

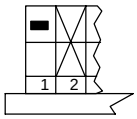
2 DIP Switch S2

Set DIP switch S2 for type of welding power source, and desired wire feed speed display (see illustration).

Reinstall wrapper.





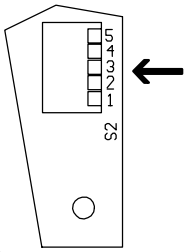


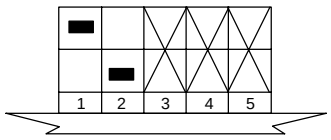
X Means switch position does not affect specified function.

■ Means switch must be in this position.

Voltage Sensing Function

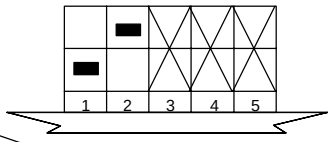
Arc Voltage Sensing Using Voltage Sensing Lead For Welding Power Source That Does Not Support Pins F And H





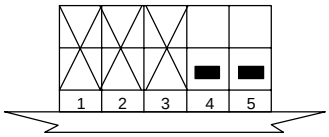
Or

Arc Voltage Sensing Using Feedback From Welding Power Source That Does Support Pins F And H



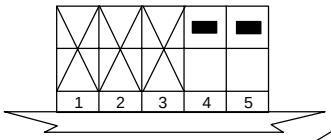
Digital Meter Display

Meters/Minute

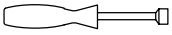


Or

Inches/Minute



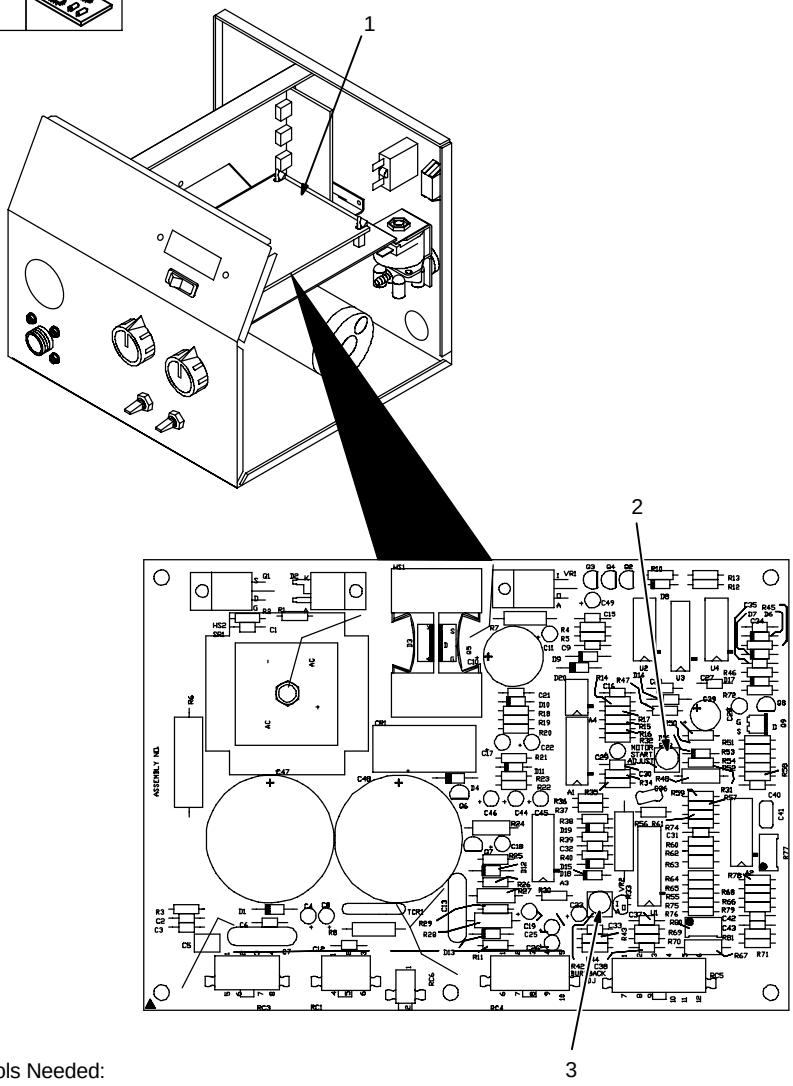
Tools Needed:



1/4 in

Ref. 802 357 / Ref. 186 266

3-9. Motor Start/Burnback Control



To change wire feed starting speed proceed as follows:

Turn Off unit and welding power source.

Remove wrapper.

1 Motor Board PC1

2 Motor Start Control Potentiometer R73

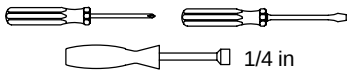
Remove protective white rubber cap before making adjustment. Adjust potentiometer R73 using a small nonconductive screwdriver. Rotate potentiometer clockwise to increase time it takes the motor to ramp up to speed.

3 Burnback Potentiometer R42

Remove protective white rubber cap before making adjustment. Adjust potentiometer R42 using a small nonconductive screwdriver. Rotate potentiometer clockwise to increase burnback time.

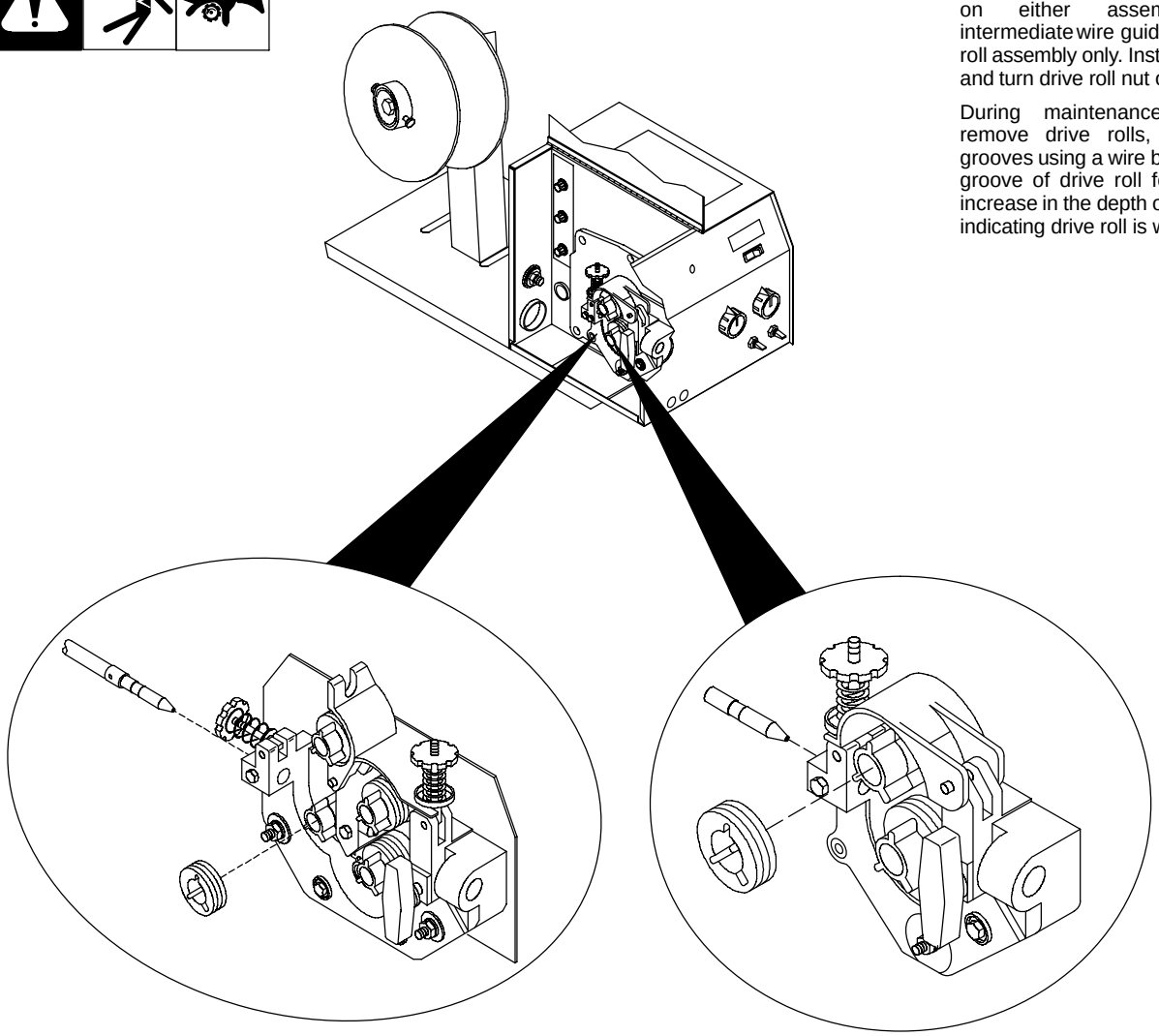
Reinstall wrapper.

Tools Needed:



Ref. 802 357 / 192 653

3-10. Installing Wire Guide And Drive Roll



Install and secure inlet wire guide on either assembly, and intermediate wire guide on 4 drive roll assembly only. Install drive rolls and turn drive roll nut one click.

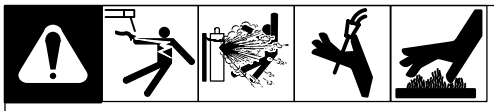
During maintenance intervals, remove drive rolls, and clean grooves using a wire brush. Check groove of drive roll for pitting or increase in the depth of the groove indicating drive roll is worn out.

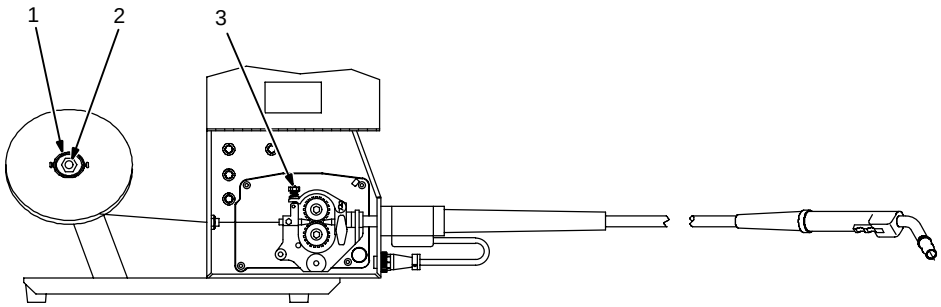
Tools Needed:

3/8 in

801 923-C

3-11. Installing And Threading Welding Wire





1 Retaining Ring

2 Hub Tension Adjustment Nut

If necessary, move hub on support for use of different size wire spool.

Remove retaining ring, and install spool so hub pin fits spool hole. Reinstall retaining ring.

Adjust tension nut so wire is taut when wire feed stops.

3 Pressure Assembly Adjustment Knob

Lay gun cable out straight.

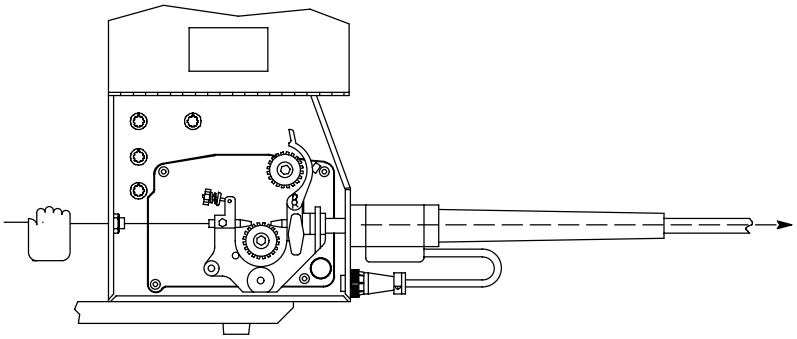
A Open pressure assembly, hold wire tightly, and cut off end. Push wire through guides into gun.

B Close and tighten pressure assembly. Press JOG button until wire comes out gun.

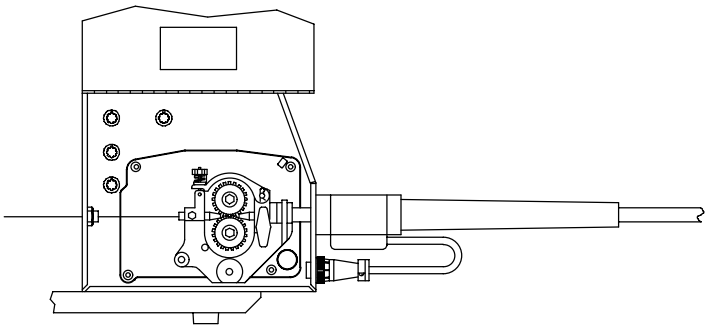
C To adjust drive roll pressure, press gun trigger to feed wire against wood surface. Tighten knob so wire does not slip.

Cut off wire. Close door.

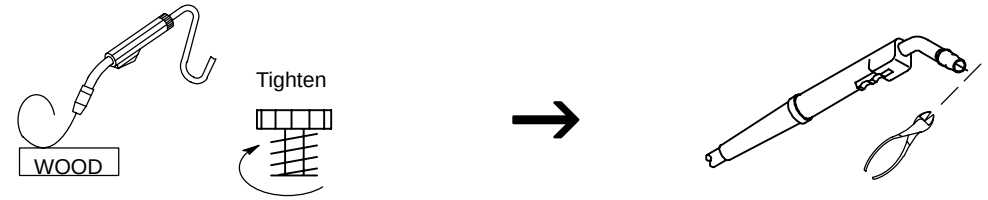
A



B



C



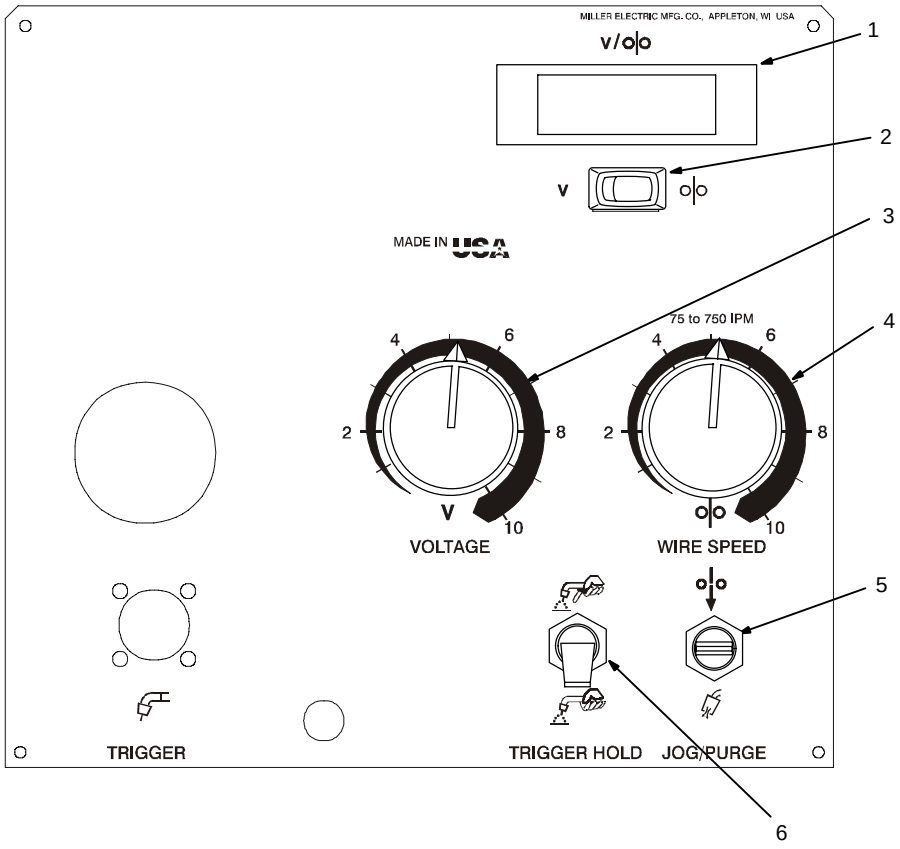
Tools Needed:

15/16 in

Ref. 802 356 / S-0627-A

SECTION 4 − OPERATION

4-1. Front Panel Controls



1 Optional Voltage/Wire Speed Meter

2 Optional Voltage/Wire Speed Switch

Use to choose volts or wire feed speed display.

3 Optional Remote Voltage Control

Use to set welding power source voltage at the wire feeder. Numbers are for reference only.

4 Wire Speed Control

5 Jog/Purge Switch

Use Jog position to momentarily feed welding wire at speed set on Wire Speed control without energizing welding circuit or shielding gas valve.

Use Purge position to momentarily energize gas valve to purge air from gun or adjust gas regulator.

6 Trigger Hold Switch

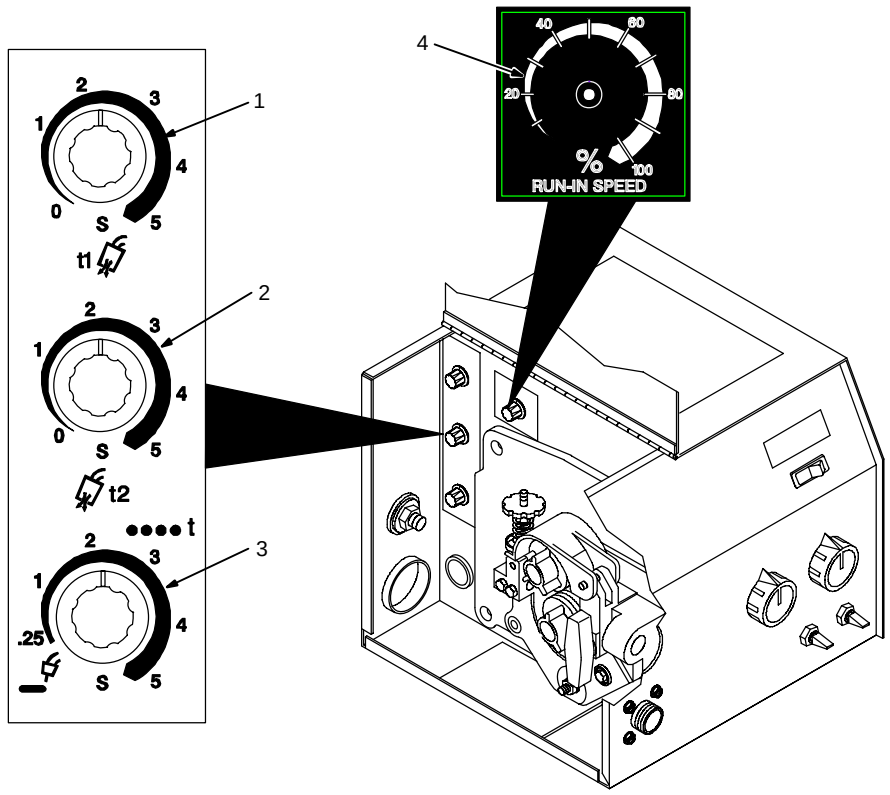
Push up to weld without holding gun trigger throughout the weld cycle.

To start weld cycle, press and release gun trigger within three seconds after an arc has been struck. To end weld, press and release gun trigger.

Power switch is on rear panel (see Section 3-5)

192 503-C

4-2. Optional Side Panel Controls



1 Preflow Control

Control sets time gas flows before welding wire is energized. Time range is 0 to 5 seconds.

2 Postflow Control

Control sets time gas flows after completion of burnback. Time range is 0 to 5 seconds.

3 Spot Time Control

Factory set for 0.25 to 5 seconds of spot time. Rotating knob fully counterclockwise selects an untimed continuous weld.

4 Run-In Control

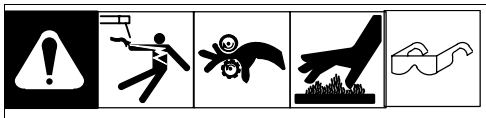
Use control to set wire feed speed before arc initiation.

Close side door.

Ref. 802 357-A / Ref. 186 589 / 210 436-A

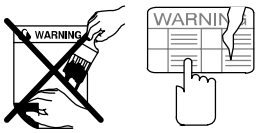
SECTION 5 − MAINTENANCE & TROUBLESHOOTING

5-1. Routine Maintenance

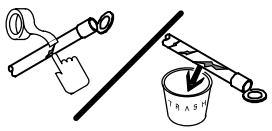


▲ **Disconnect power before maintaining.**

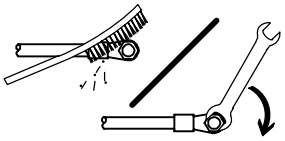
3 Months



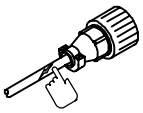
Replace Unreadable Labels



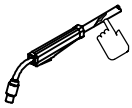
Repair Or Replace Cracked Weld Cable



Clean And Tighten Weld Terminals



14-Pin Cord

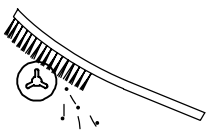


Gun Cable

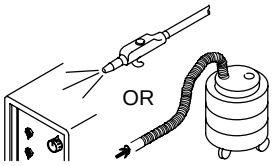
Gas Hose

Replace Cracked Parts

6 Months

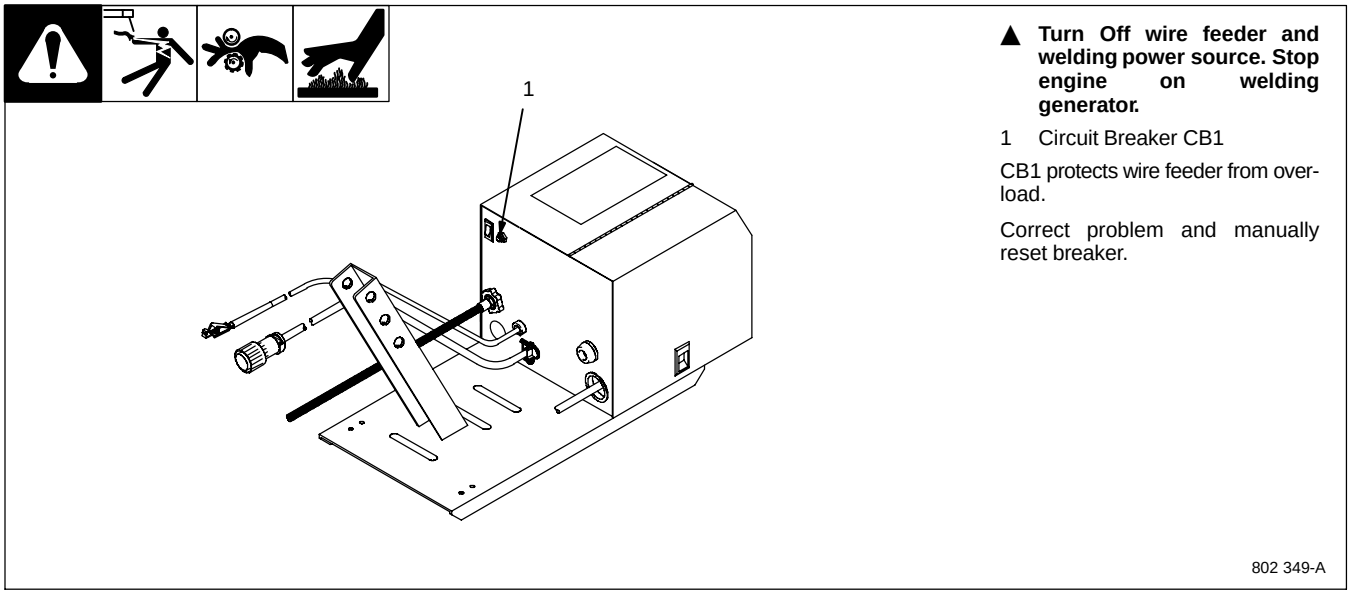


Clean Drive Rolls



Blow Out Or Vacuum Inside, During Heavy Service, Clean Monthly

5-2. Overload Protection



▲ **Turn Off wire feeder and welding power source. Stop engine on welding generator.**

1 Circuit Breaker CB1

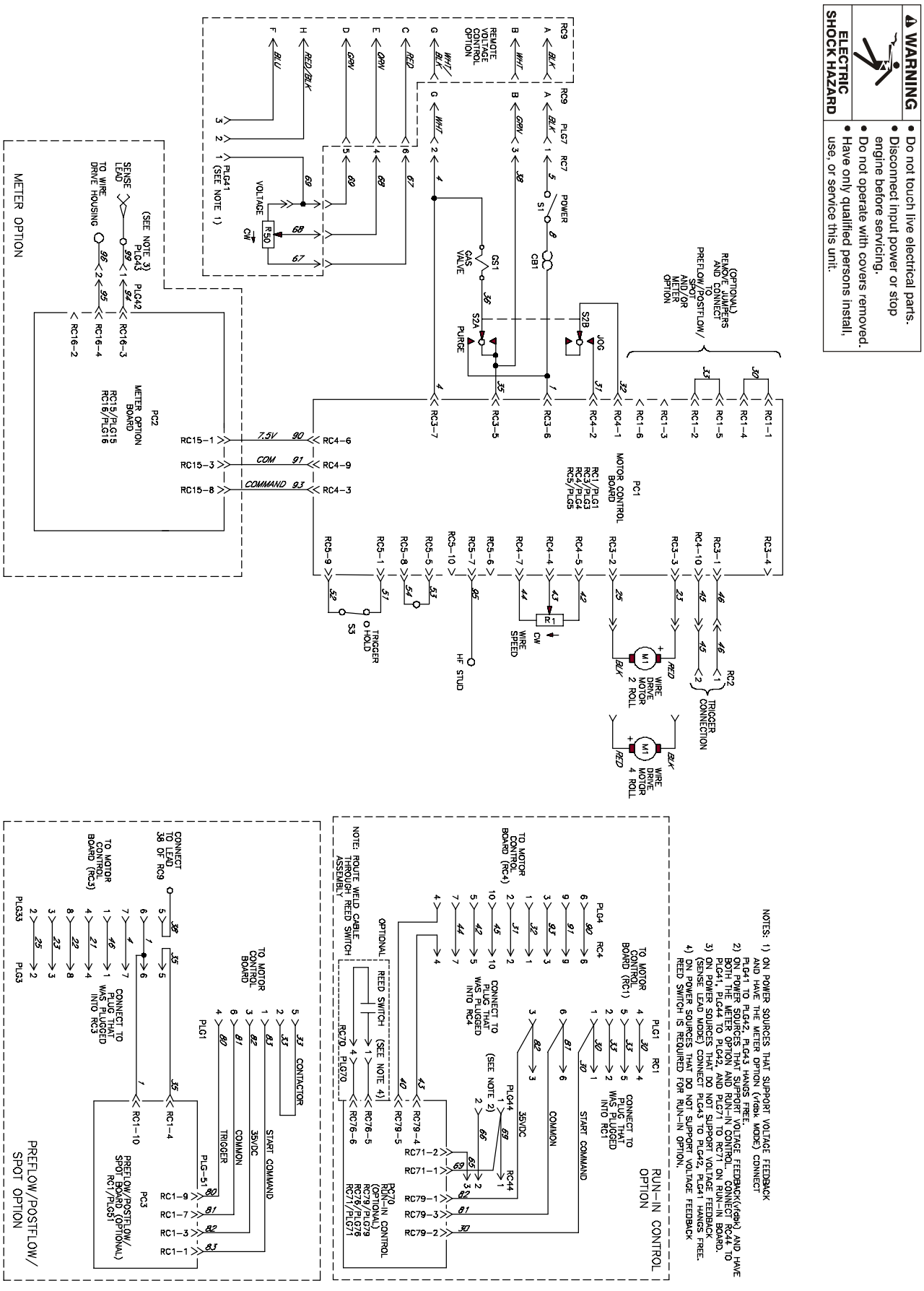
CB1 protects wire feeder from overload.

Correct problem and manually reset breaker.

5-3. Troubleshooting

Trouble	Remedy
Wire does not feed, unit completely inoperative.	Turn Power switch On.
	Check 14−pin plug PLG2 connections.
	Check input power.
Wire does not feed.	Check circuit breaker CB1. (see Section 5-2)
	Check gun trigger connection at wire feeder. Check gun trigger leads and trigger switch. See gun Owner's Manual.
	Run-In speed is set to minimum. Normal setting is 50 percent.
	Have Factory Authorized Service Agent check drive motor and control board PC1.
Wire feeds erratically.	Readjust hub tension and drive roll pressure (see Section 3-11).
	Use correct size drive roll (see Parts List).
	Clean or replace dirty or worn drive roll (see Section 3-10).
	Remove weld spatter around nozzle opening.
	Replace contact tip or liner. See gun Owner's Manual.
	Have Factory Authorized Service Agent check drive motor and control board PC1.
Wire feeds when Jog switch is pressed but not when gun trigger is pressed.	Check gun trigger connection at wire feeder. Check gun trigger leads and trigger switch. See gun Owner's Manual.
Wire feeds as soon as power is applied.	Check gun trigger. See gun Owner's Manual.
Wire does not feed until trigger is pressed but continues to feed after trigger is released.	Check for short between gun trigger leads and weld cable. Repair or replace gun trigger leads.
Gas valve rattles loudly and wire feeds slowly or erratically.	Check for short between gun trigger leads and weld cable. Repair or replace gun trigger leads.
Gas does not flow; wire feeds.	Check gas valve and flowmeter.

SECTION 6 − ELECTRICAL DIAGRAM


WARNING
ELECTRIC SHOCK HAZARD
• Do not touch live electrical parts.
• Disconnect input power or stop engine before servicing.
• Do not operate with covers removed.
• Have only qualified persons install, use, or service this unit.
RUN−IN CONTROL OPTION
PREFLOW/POSTFLOW/ SPOT OPTION
METER OPTION
PC1 MOTOR CONTROL BOARD
PC2 METER OPTION BOARD
PC3 PREFLOW/POSTFLOW/ SPOT BOARD (OPTIONAL)
REMOTE VOLTAGE CONTROL OPTION
TRIGGER CONNECTION
WIRE DRIVE MOTOR 2 ROLL
WIRE DRIVE MOTOR 4 ROLL
GAS VALVE
WIRE SPEED
TRIGGER HOLD
HF STUD
JOG
PURGE
POWER
VOLTAGE
SENSE LEAD
TO WIRE DRIVE HOUSING
CONTACTOR
START COMMAND
COMMON
TRIGGER
35VDC
CONNECT TO PLUG THAT WAS PLUGGED INTO RC1
CONNECT TO PLUG THAT WAS PLUGGED INTO RC4
CONNECT TO PLUG THAT WAS PLUGGED INTO RC3
CONNECT TO LEAD 38 OF RC9
TO MOTOR CONTROL BOARD (RC1)
TO MOTOR CONTROL BOARD (RC4)
TO MOTOR CONTROL BOARD (RC3)
TO MOTOR CONTROL BOARD
REED SWITCH (SEE NOTE 4)
OPTIONAL
NOTE: ROUTE WELD CABLE THROUGH REED SWITCH ASSEMBLY
NOTES: 1) ON POWER SOURCES THAT SUPPORT VOLTAGE FEEDBACK AND HAVE THE METER OPTION (vrdnk MODE) CONNECT PLG41 TO PLG42, PLG43 HANGS FREE.
2) ON POWER SOURCES THAT SUPPORT VOLTAGE FEEDBACK(vrdnk) AND HAVE BOTH THE METER OPTION AND RUN−IN CONTROL. CONNECT RC44 TO PLG41, PLG44 TO PLG42, AND PLG71 TO RC71 ON RUN−IN BOARD.
3) ON POWER SOURCES THAT DO NOT SUPPORT VOLTAGE FEEDBACK (SENSE LEAD MODE) CONNECT PLG43 TO PLG42, PLG41 HANGS FREE.
4) ON POWER SOURCES THAT DO NOT SUPPORT VOLTAGE FEEDBACK REED SWITCH IS REQUIRED FOR RUN−IN OPTION.

210 430-A

Figure 6-1. Circuit Diagram For Wire Feeder With Optional Equipment

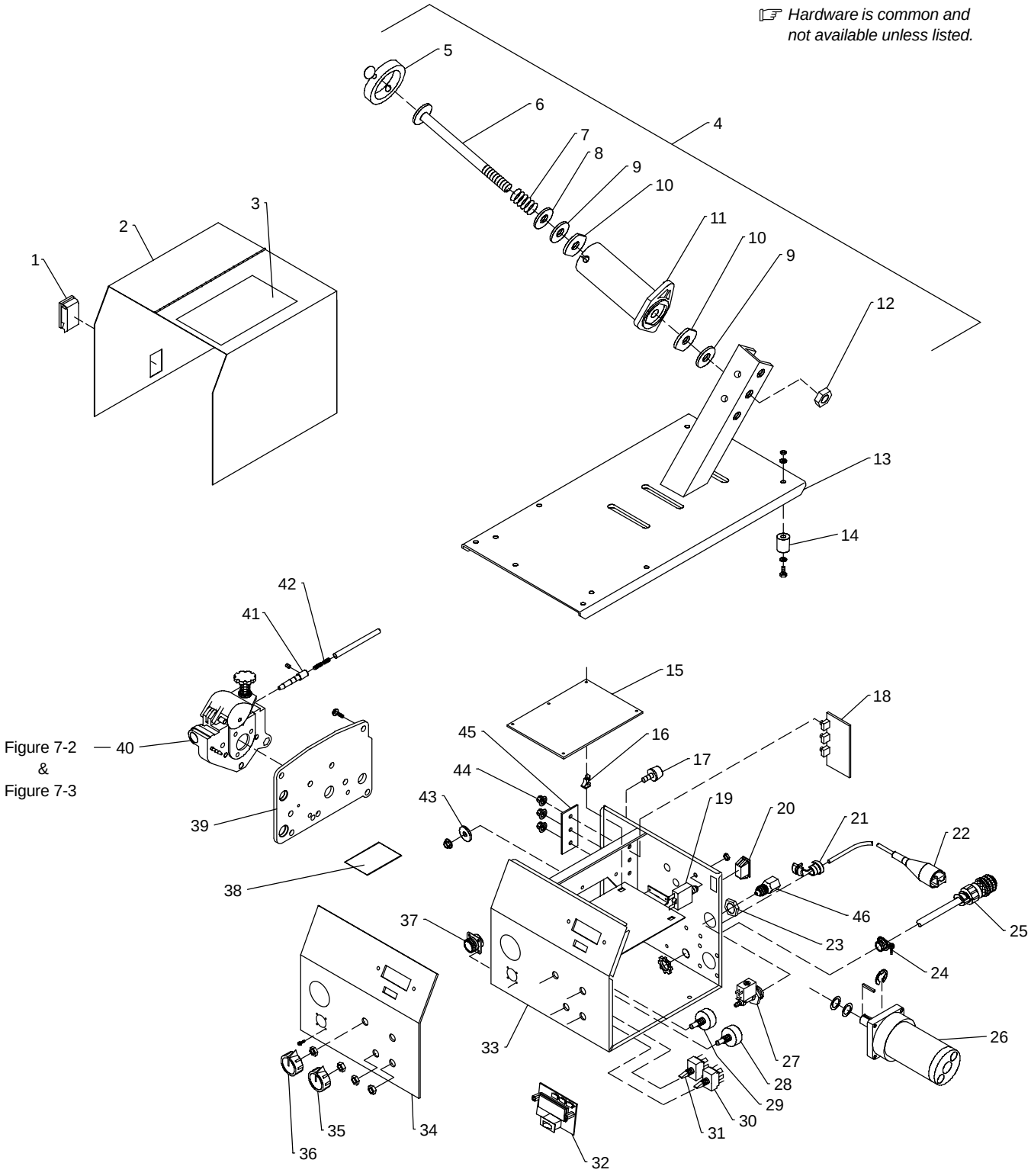


Figure 7.1. Main Assembly

802 358-F

Item No.	Diagram marking	Part No.	Description	Quantity

Figure 7-1. Main Assembly

1		089 899	LATCH	1
2		+198 650	WRAPPER	1
		126 873	BUMPER	1
3		134 464	LABEL, warning electric shock	1
4		072 094	HUB & SPINDLE ASSEMBLY, (consisting of)	1
5		058 427	RING, retaining spool	1
6		180 572	SHAFT, spool support	1
7		010 233	SPRING, cprsn .970 OD x .120 wire x 1.250	1
8		057 971	WASHER, flat stl keyed 1.500dia x .125thk	1
9		010 191	WASHER, fbr .656 ID x 1.500 OD x .125thk	2
10		058 628	WASHER, brake stl	2
11		058 428	HUB, spool	1
12		135 205	NUT, stl slflkg hex reg .625-11 w/nylon insert	1
13		137 461	BASE	1
14		134 306	FOOT, rbr 1.250dia x 1.375 high	4
15	PC1	207 272	CIRCUIT CARD, motor speed control	1
16		134 201	STAND-OFF SUPPORT, PC card	5
17		131 181	WIRE GUIDE & NUT	1
18	PC3	♦186 297	CIRCUIT CARD, timer	1
		♦098 691	STAND-OFF, No 6-32 x .500	1
	PLG1	♦115 093	CONNECTOR & SOCKETS	1
	PLG3	♦135 409	CONNECTOR & PINS	1
	PLG33	♦115 092	CONNECTOR & SOCKETS	1
	PLG51	♦115 091	CONNECTOR & SOCKETS	1
19	CB1	161 078	CIRCUIT BREAKER, man reset 1P 7A 250VAC	1
20	S1	111 997	SWITCH, rocker SPST 10A 250VAC	1
21		♦138 044	STRAIN RELIEF	1
22		♦126 693	CABLE, sensing 15ft	1
23		605 227	NUT, nyl hex jam .750NPST	1
24		115 104	CONNECTOR, clamp cable .500	1
24		010 325	BUSHING, strain relief .840 ID X .875 mtg hole (used with 24A)	1
25		192 525	CABLE, power 10ft 4in 18ga 3c (consisting of)	11ft
		143 922	CONNECTOR, circ cpc clamp	1
		182 271	CABLE, port No. 18 3/c	1
	PLG9	141 162	HOUSING PLUG & PINS	1
	PLG7	115 093	HOUSING PLUG & SKTS	1
25		192 526	CABLE, power 10ft 4in 16ga 8c (used with 24A) (consisting of)	11ft
		079 739	CONNECTOR, circ cpc clamp	1
		600 797	CABLE, port No. 18 3/c	1
	PLG41	131 204	HOUSING PLUG & SKTS	1
26	M1	193 188	MOTOR, gear 24VDC 146RPM (consisting of)	1
		*136 745	BRUSH & SPRING ASSEMBLY	2
27	GS1	216 126	VALVE, GAS W/FITTINGS 24VAC	1
	PLG1	115 093	CONNECTOR & SOCKETS	1
	PLG3	115 092	CONNECTOR & SOCKETS	1
	PLG4	115 091	CONNECTOR & SOCKETS	1
	PLG5	130 203	CONNECTOR & SOCKETS	1
28	R1	073 562	POTENTIOMETER, C sltd sft1/T 2W 10K ohm	1
29	R50	♦♦035 897	POTENTIOMETER, C sltd sft1/T 2W 1K linear	1
30	S2	211 476	SWITCH, tgl SPTT 6A 125VAC	1
31	S3	134 847	SWITCH, tgl SPDT 15A 125VAC	1
		187 577	COVER, opening meter	1
		♦133 644	FRAME, snap-in switch rocker	1
32	PC2	♦186 268	CIRCUIT CARD, meter (consisting of)	1
	LCD1	181 355	METER, digital	1
	PLG15	♦115 092	CONNECTOR & SOCKETS	1
	PLG16	♦131 055	CONNECTOR & SOCKETS	1

Item No.	Diagram marking	Part No.	Description	Quantity
		♦115 443	STAND-OFF, 6-32 x .750 lg	2
33		197 328	CASE ASSEMBLY	1
		183 914	BLANK, snap-in nyl 1.250 mtg hole	1
34			NAMEPLATE (order by model and serial number)	1
35		097 924	KNOB, pointer	1
36		♦♦097 924	KNOB, pointer	1
37	RC2	048 282	RECEPTACLE w/SOCKETS	1
38		196 956	LABEL, warning electric shock and pinch	1
39		192 874	PLATE, insulator	1
40	Fig 7-2 & 7-3		WIRE DRIVE ASSEMBLY	1
41		188 149	GUIDE, wire inlet(consisting of) (4 drive roll)	1
42		082 050	LINER, monocoil inlet wire	1
		082 036	GUIDE, wire inlet	1
		187 421	TUBE, guide .030-.035	1
		187 422	TUBE, guide .045-.062	1
43		010 291	WASHER, flat .625 x 1.250 OD x .125thk nylafil	1
44		♦093 551	KNOB, pointer	3
45		♦186 587	PLATE, control timer	1
		♦187 909	HANDLE, lifting	1
		♦604 423	GRIP, handle	1
		♦188 674	LABEL, caution incorrect lifting	1
		♦192 526	CABLE, power (consisting of)	1
		079 739	CONNECTOR, circ cpc clamp	1
		600 797	CABLE, port No. 16 8/c 10ft 4in	11ft
	PLG41	131 204	HOUSING PLUG & SKTS	1
	PLG7	115 093	HOUSING PLUG & SKTS	1
	PLG9	141 162	HOUSING PLUG & PINS	1
		♦♦010 325	BUSHING, strain relief	1
		♦♦605 339	WASHER, tooth	1
		♦604 645	NUT, .375-32 x .56 hex	1
	PC70	♦♦210 408	CIRCUIT CARD ASSY	1
		♦♦194 310	BRACKET, mounting	1
		♦♦097 132	STAND-OFF, 6-32 x .375 lg .250 hex	2
		♦♦093 551	KNOB	1
		♦140 789	SWITCH, reed	1
		♦♦210 436	LABEL, indicator run-in	1
		♦193 719	BRACKET, mounting receptacle	1
		♦115 093	HOUSING PLUG & SOCKETS	1
		♦131 059	HOUSING PLUG & SOCKETS	1
		♦115 091	HOUSING PLUG & SOCKETS	1
		♦135 531	HOUSING PLUG & SOCKETS	1
		♦048 282	HOUSING PLUG & SOCKETS	1
46		211 989	FITTING, w/screen	1

Figure 7-1. Main Assembly (Continued)

+When ordering a component originally displaying a precautionary label, the label should also be ordered.
♦OPTIONAL
♦♦OPTIONAL IN 22A, STANDARD IN 24A

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

Item No.	Diagram marking	Part No.	Description	Quantity

Figure 7-2. Drive Assembly, Wire (2 Drive Roll) (Fig 7-1 Item 40)

. . . 1	. . . . .	602 009	. . . SCREW, .250-20 x 1.250 soc hd hex gr 8	1
. . . 2	. . . . .	172 075	. . . CARRIER, drive roll w/component 24 pitch	1
. . . 3	. . . . .	054 263	. . . SCREW, thumb stl .250-20 x .500	1
. . . 4	. . . . .	010 224	. . . PIN, spring CS .187 x 1.000	1
. . . 5	. . . . .	166 072	. . . SPACER, gear	1
. . . 6	. . . . .	089 562	. . . FASTENER, pinned	1
. . . 7	. . . . .	085 244	. . . WASHER, cupped stl .328 ID x .812 OD x .125	1
. . . 8	. . . . .	089 477	. . . SPRING, cprsn .770 OD x .105 wire x 1.225	1
. . . 9	. . . . .	085 243	. . . KNOB, adjustment tension	1
. . . 10	. . . . .	166 071	. . . LEVER, mtg pressure gear	1
. . . 11	. . . . .	151 828	. . . PIN, cotter hair .054 x .750	2
. . . 12	. . . . .	079 634	. . . PIN, hinge	1
. . . 13	. . . . .	144 172	. . . FITTING, hose brs barbed m 3/16 tbg x .250-20	1
. . . 14	. . . . .	172 391	. . . HOUSING, adapter gun/feeder	1
. . . 15	. . . . .	048 449	. . . WASHER, shldr nyl .363 OD x .194 ID x .703	1
. . . 16	. . . . .	124 778	. . . KNOB, T 2.000 bar w/.312-18 x 1.000lg	1
. . . 17	. . . . .	605 308	. . . RING, rtng ext .500 shaft	1
. . . 18	. . . . .	079 625	. . . WASHER, wave .500 ID x .750 OD x .015thk	1
. . . 19	. . . . .	121 271	. . . SCREW, .250-20 x .500 soc hd	1
. . . 20	. . . . .	172 076	. . . CARRIER, drive roll w/components 24 pitch	1
. . . 21	. . . . .	092 865	. . . KEY, stl	1

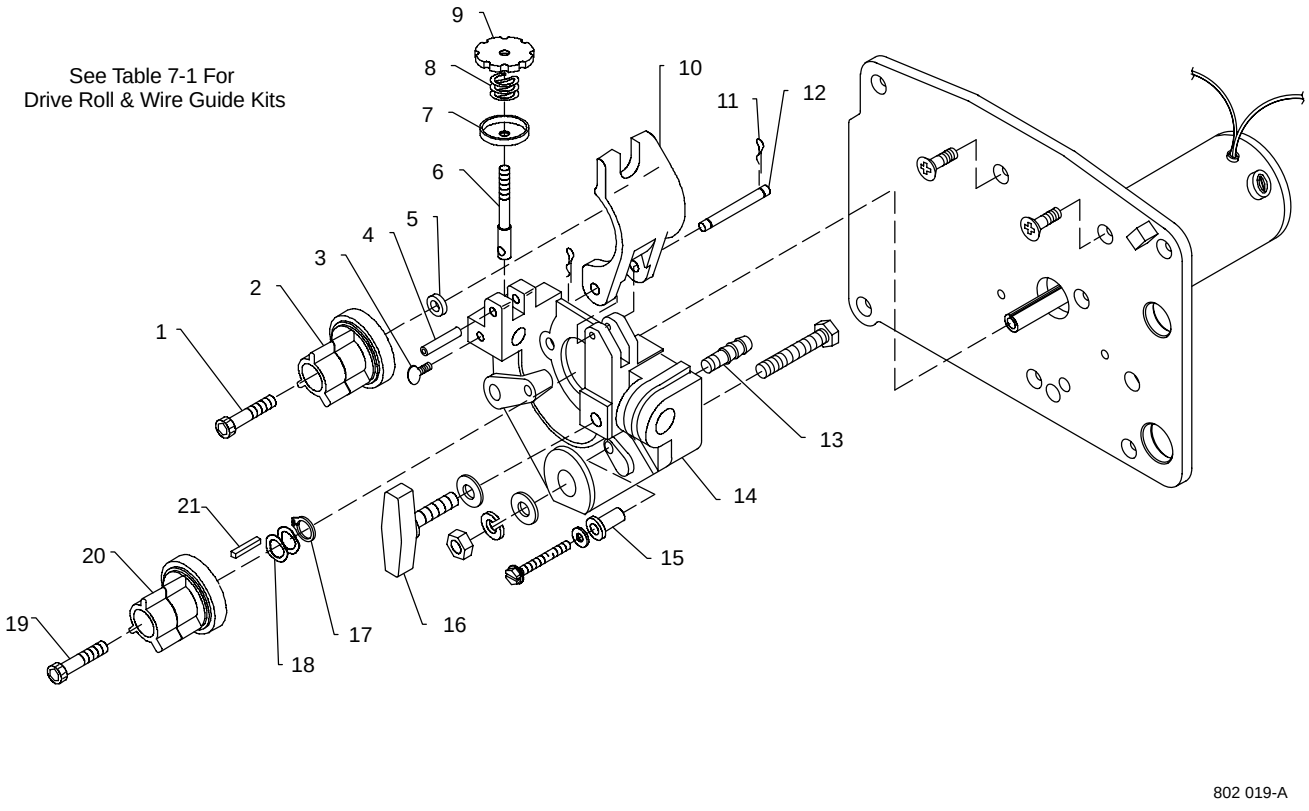


Figure 7.2. Drive Assembly, Wire (2 Drive Roll)

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

Item No.	Diagram marking	Part No.	Description	Quantity

Figure 7-3. Drive Assembly, Wire (4 Drive Roll) (Fig 7-1 Item 40)

. . . 1	. . . . .	602 009	. . . SCREW, .250-20 x 1.250 soc hd hex gr 8	4
. . . 2	. . . . .	172 075	. . . CARRIER, drive roll w/component 24 pitch	4
. . . 3	. . . . .	166 072	. . . SPACER, gear	4
. . . 4	. . . . .	054 263	. . . SCREW, thumb stl .250-20 x .500	2
. . . 5	. . . . .	010 224	. . . PIN, spring CS .187 x 1.000	2
. . . 6	. . . . .	089 562	. . . FASTENER, pinned	2
. . . 7	. . . . .	085 244	. . . WASHER, cupped stl .328 ID x .812 OD x .125	2
. . . 8	. . . . .	089 477	. . . SPRING, cprsn .770 OD x .105 wire x 1.225	2
. . . 9	. . . . .	085 243	. . . KNOB, adjustment tension	2
. . . 10	. . . . .	166 071	. . . LEVER, mtg pressure gear	1
. . . 11	. . . . .	079 634	. . . PIN, hinge	1
. . . 12	. . . . .	151 828	. . . PIN, cotter hair .054 x .750	2
. . . 13	. . . . .	166 338	. . . LEVER, mtg pressure gear	1
. . . 14	. . . . .	605 308	. . . RING, rtng ext .500 shaft	1
. . . 15	. . . . .	187 325	. . . INSULATOR, drive assembly	1
. . . 16	. . . . .	144 172	. . . FITTING, hose brs barbed m 3/16 tbg x .250-20	1
. . . 17	. . . . .	166 337	. . . HOUSING, adapter gun/feeder	1
. . . 18	. . . . .	168 590	. . . BUSHING, insulating	2
. . . 19	. . . . .	072 010	. . . WASHER, shldr .316 ID x .812 OD x .187thk	2
. . . 20	. . . . .	124 778	. . . KNOB, T 2.000 bar w/.312-18 x 1.000lg	1
. . . 21	. . . . .	079 625	. . . WASHER, wave .500 ID x .750 OD x .015thk	2
. . . 22	. . . . .	092 865	. . . KEY, stl	1
. . . 23	. . . . .	172 077	. . . CARRIER, drive roll keyed 24 pitch	1
. . . 24	. . . . .	121 271	. . . SCREW, .250-20 x .500 soc hd	1

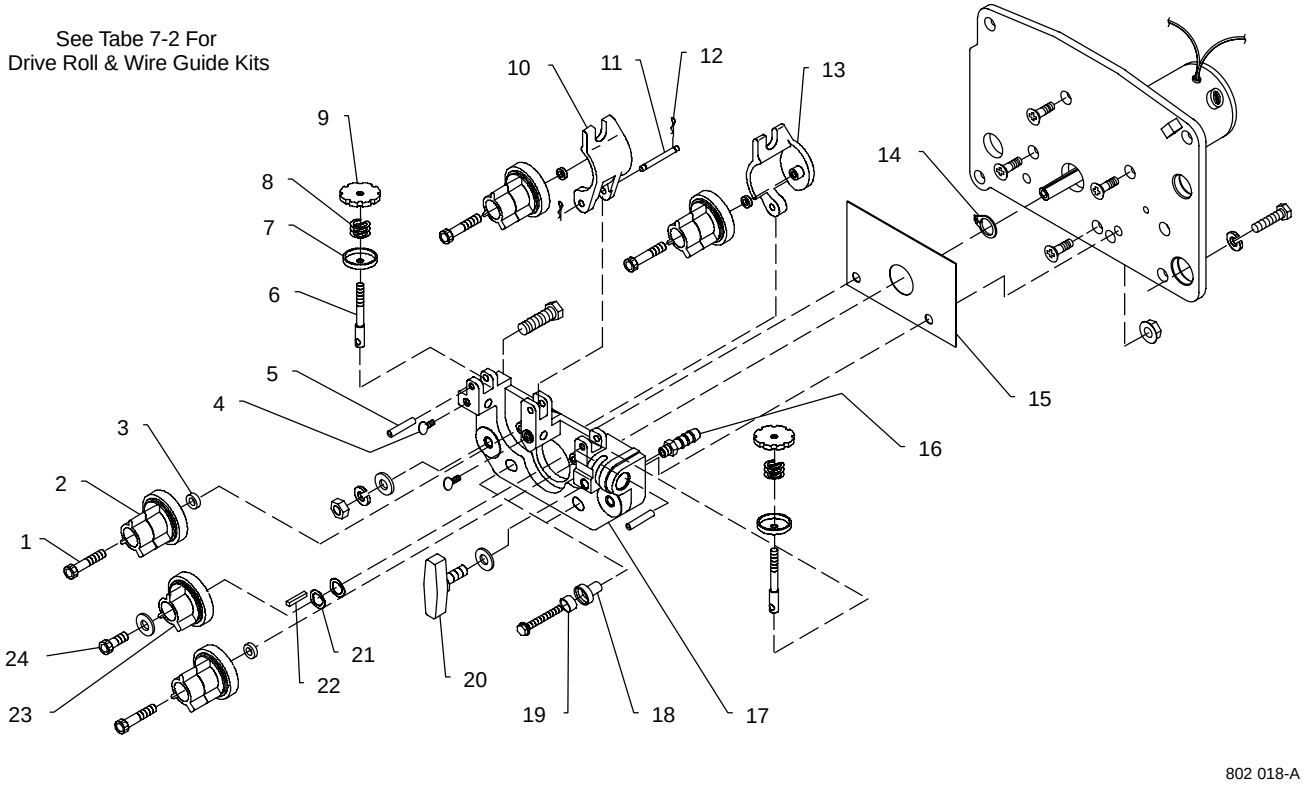


Figure 7.3. Drive Assembly, Wire (4 Drive Roll)

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

Table 7-1. Drive Roll And Wire Guide Kits (2 Drive Roll)

NOTE ☞

Base selection of drive rolls upon the following recommended usages:

1. *V-Grooved rolls for hard wire.*
2. *U-Grooved rolls for soft and soft shelled cored wires.*
3. *U-Cogged rolls for extremely soft shelled wires (usually hard surfacing types).*
4. *V-Knurled rolls for hard shelled cored wires.*
5. *Drive roll types may be mixed to suit particular requirements (example: V-Knurled roll in combination with U-Grooved).*

Wire Diameter			Kit No.	Drive Roll		Inlet Wire Guide
Fraction	Decimal	Metric		Part No.	Type	
.023/.025 in	.023/.025 in	0.6 mm	087 131	087 130	V-Grooved	056 192
.030 in	.030 in	0.8 mm	079 594	053 695	V-Grooved	056 192
.035 in	.035 in	0.9 mm	079 595	053 700	V-Grooved	056 192
.040 in	.040 in	1.0 mm	161 189	053 696	V-Grooved	056 192
.045 in	.045 in	1.2 mm	079 596	053 697	V-Grooved	056 193
.052 in	.052 in	1.3 mm	079 597	053 698	V-Grooved	056 193
1/16 in	.062 in	1.6 mm	079 598	053 699	V-Grooved	056 195
.035 in	.035 in	0.9 mm	044 749	072 000	U-Grooved	056 192
.045 in	.045 in	1.2 mm	079 599	053 701	U-Grooved	056 193
.052 in	.052 in	1.3 mm	079 600	053 702	U-Grooved	056 193
1/16 in	.062 in	1.6 mm	079 601	053 706	U-Grooved	056 195
5/64 in	.079 in	2.0 mm	079 602	053 704	U-Grooved	056 195
.035 in	.035 in	0.9 mm	079 606	132 958	V-Knurled	056 192
.045 in	.045 in	1.2 mm	079 607	132 957	V-Knurled	056 193
.052 in	.052 in	1.3 mm	079 608	132 956	V-Knurled	056 193
1/16 in	.062 in	1.6 mm	079 609	132 955	V-Knurled	056 195
.068-.072 in	.068-.072 in	1.8 mm	089 984	132 959	V-Knurled	056 195
5/64 in	.079 in	2.0 mm	079 610	132 960	V-Knurled	056 195
.045 in	.045 in	1.2 mm	083 318	083 489	U-Cogged	056 193
.052 in	.052 in	1.3 mm	083 317	083 490	U-Cogged	056 193
1/16 in	.062 in	1.6 mm	079 614	053 708	U-Cogged	056 195
5/64 in	.079 in	2.0 mm	079 615	053 710	U-Cogged	056 195

S-0157-C

Table 7-2. Drive Roll & Wire Guide Kits (4 Drive Roll)

NOTE ☞

Base selection of drive rolls upon the following recommended usages:

1. *V-Grooved rolls for hard wire.*
2. *U-Grooved rolls for soft and soft shelled cored wires.*
3. *U-Cogged rolls for extremely soft shelled wires (usually hard surfacing types).*
4. *V-Knurled rolls for hard shelled cored wires.*
5. *Drive roll types may be mixed to suit particular requirements (example: V-Knurled roll in combination with U-Grooved).*

Wire Diameter			Kit No.	Drive Roll		Wire Guide	
Fraction	Decimal	Metric		Part No.	Type	Inlet	Intermediate
.023/.025 in	.023/.025 in	0.6 mm	087 132	087 130	V-Grooved	056 192	056 206
.030 in	.030 in	0.8 mm	046 780	053 695	V-Grooved	056 192	056 206
.035 in	.035 in	0.9 mm	046 781	053 700	V-Grooved	056 192	056 206
.040 in	.040 in	1.0 mm	191 917	053 696	V-Grooved	056 192	056 206
.045 in	.045 in	1.2 mm	046 782	053 697	V-Grooved	056 193	056 207
.052 in	.052 in	1.3 mm	046 783	053 698	V-Grooved	056 193	056 207
1/16 in	.062 in	1.6 mm	046 784	053 699	V-Grooved	056 195	056 209
.035 in	.035 in	0.9 mm	044 750	072 000	U-Grooved	056 192	056 206
.045 in	.045 in	1.2 mm	046 785	053 701	U-Grooved	056 193	056 207
.052 in	.052 in	1.3 mm	046 786	053 702	U-Grooved	056 193	056 207
1/16 in	.062 in	1.6 mm	046 787	053 706	U-Grooved	056 195	056 209
5/64 in	.079 in	2.0 mm	046 788	053 704	U-Grooved	056 195	056 209
.035 in	.035 in	0.9 mm	046 792	132 958	V-Knurled	056 192	056 206
.045 in	.045 in	1.2 mm	046 793	132 957	V-Knurled	056 193	056 207
.052 in	.052 in	1.3 mm	046 794	132 956	V-Knurled	056 193	056 207
1/16 in	.062 in	1.6 mm	046 795	132 955	V-Knurled	056 195	056 209
.068-.072 in	.068-.072 in	1.8 mm	089 985	132 959	V-Knurled	056 195	056 209
5/64 in	.079 in	2.0 mm	046 796	132 960	V-Knurled	056 195	056 209
.045 in	.045 in	1.2 mm	083 319	083 489	U-Cogged	056 193	056 207
.052 in	.052 in	1.3 mm	083 320	083 490	U-Cogged	056 193	056 207
1/16 in	.062 in	1.6 mm	046 800	053 708	U-Cogged	056 195	056 209
5/64 in	.079 in	2.0 mm	046 801	053 710	U-Cogged	056 195	056 209

Ref. S-0025-D

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(Equipment with a serial number preface of "LE" or newer)

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Within the warranty periods listed below, Miller will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. Miller must be notified in writing within thirty (30) days of such defect or failure, at which time Miller will provide instructions on the warranty claim procedures to be followed.

Miller shall honor warranty claims on warranted equipment listed below in the event of such a failure within the warranty time periods. All warranty time periods start on the date that the equipment was delivered to the original retail purchaser, or one year after the equipment is sent to a North American distributor or eighteen months after the equipment is sent to an International distributor.

1. 5 Years Parts — 3 Years Labor
   * Original main power rectifiers
   * Inverters (input and output rectifiers only)
2. 3 Years — Parts and Labor
   * Transformer/Rectifier Power Sources
   * Plasma Arc Cutting Power Sources
   * Semi-Automatic and Automatic Wire Feeders
   * Inverter Power Supplies (Unless Otherwise Stated)
   * Intellitig
   * Maxstar 150
   * Engine Driven Welding Generators **(NOTE: Engines are warranted separately by the engine manufacturer.)**
3. 1 Year — Parts and Labor Unless Specified
   * DS-2 Wire Feeder
   * Motor Driven Guns (w/exception of Spoolmate Spoolguns)
   * Process Controllers
   * Positioners and Controllers
   * Automatic Motion Devices
   * RFCS Foot Controls
   * Induction Heating Power Sources
   * Water Coolant Systems
   * Flowgauge and Flowmeter Regulators (No Labor)
   * HF Units
   * Grids
   * Maxstar 85, 140
   * Spot Welders
   * Load Banks
   * Arc Stud Power Sources & Arc Stud Guns
   * Racks
   * Running Gear/Trailers
   * Plasma Cutting Torches (except APT & SAF Models)
   * Field Options
     (NOTE: Field options are covered under True Blue® for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.)
4. 6 Months — Batteries
5. 90 Days — Parts
   * MIG Guns/TIG Torches
   * Induction Heating Coils and Blankets
   * APT & SAF Model Plasma Cutting Torches
   * Remote Controls
   * Accessory Kits
   * Replacement Parts (No labor)
   * Spoolmate Spoolguns
   * Canvas Covers

Miller's True Blue® Limited Warranty shall not apply to:

1. **Consumable components; such as contact tips, cutting nozzles, contactors, brushes, slip rings, relays or parts that fail due to normal wear. (Exception: brushes, slip rings, and relays are covered on Bobcat, Trailblazer, and Legend models.)**
2. Items furnished by Miller, but manufactured by others, such as engines or trade accessories. These items are covered by the manufacturer's warranty, if any.
3. Equipment that has been modified by any party other than Miller, or equipment that has been improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.

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Please complete and retain with your personal records.

Model Name	Serial/Style Number
Purchase Date	(Date which equipment was delivered to original customer.)
Distributor	
Address	
City	
State	Zip

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Miller Electric Mfg. Co.
An Illinois Tool Works Company
1635 West Spencer Street
Appleton, WI 54914 USA

International Headquarters–USA
USA Phone: 920-735-4505 Auto-Attended
USA & Canada FAX: 920-735-4134
International FAX: 920-735-4125

European Headquarters – United Kingdom
Phone: 44 (0) 1204-593493
FAX: 44 (0) 1204-598066

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